

BLUE BOOK

1948

for manufacturers and distributors of

SOAPS
INSECTICIDES
DISINFECTANTS
CHEMICAL SPECIALTIES
SANITARY SUPPLIES
POLISHES
CLEANERS

Issued Annually by the Publishers of

SOAP AND SANITARY CHEMICALS

NEW YORK



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by
MACNAIR-DORLAND CO.

Depend on Du Pont

TO SOLVE
YOUR PERFUMING PROBLEMS

- Come to Du Pont early in your thinking about a new product . . . or about a needed lift for one already established. Our perfumers and chemists are ready to pool their talents with yours. And our complete facilities are at your disposal. Whatever the product, whatever the fragrance, you'll want to see us early . . . for you can always DEPEND ON DU PONT.

ALCOHOL C-8
 ALCOHOL C-10
 ALCOHOL C-12
 ALPINE VIOLET* (Cyclamen Aldehyde)
 AMBRENE*
 ANISIC ALDEHYDE (Aubepine)
 ASTROTONE® BR
 BENZYL PROPIONATE
 CEDRENE
 CITRAL
 COUMARIN
 CUMINIC ALDEHYDE
 CYCLOHEXYL BUTYRATE
 DIMETHYL ANTHRANILATE

DIMETHYL HYDROQUINONE
 GERANIOL
 GERANYL ACETATE
 HEXYL SALICYLATE
 HYACYLENE P AND S (Dimethyl Acetal
 of Phenyl Acetaldehyde)
 HYDROXYCITRONELLAL
 INDOLE
 ISO AMYL BENZYL ETHER
 ISO BORNEOL
 ISOBORNYL ACETATE
 ISOBORNYL PROPIONATE
 LAURYL ACETATE
 METHYL ANTHRANILATE
 METHYL "RHODIONE" (Methyl Ionone)

MUGOL® (Dimethyl Acetal of
 Hydroxycitronellal)
 MUSK AMBRETTE
 MUSK XYLOL
 OCTYL SALICYLATE
 ORANGEOL N
 PARA CRESOL METHYL
 ETHER
 RHODINOL
 RHODIONE* (Ionone)
 TERPINEOL
 TERPINYL ACETATE
 TERPINYL PROPIONATE
 TONKENE® P
 VIOLET KETONE

*Trade-Mark.

E. I. du Pont de Nemours & Co. (Inc.)

Organic Chemicals Department

Aromatics Section

Wilmington 98, Delaware

Branch Offices: Atlanta, Boston, Charlotte,
 Chicago, New York, Philadelphia, Providence,
 San Francisco.



BLUE BOOK

1948

AN ANNUAL BUYERS GUIDE,
DIRECTORY AND REFERENCE
VOLUME FOR MANUFACTURERS
AND DISTRIBUTORS OF SOAPS,
INSECTICIDES, DISINFECTANTS,
POLISHES, CLEANERS AND
ALLIED CHEMICAL SPECIALTIES

Twentieth Edition

ISSUED ANNUALLY BY

MacNair-Dorland Company

254 West 31st Street

New York, N. Y.

JULY 1933

SR668.1 S67

1948 c.1



Many manufacturers of soaps, insecticides and disinfectants know that this label is the mark of quality. They know, too, that Orbis is recognized as a dependable source for perfume compounds, fine domestic and imported essential oils, aromatic chemicals and gums—whole or powdered and insecticide concentrates.

Samples cheerfully furnished. Write us regarding your particular problem.

ORBIS INSECTICIDES

Cube Powder 4%-5% Rotenone
Derris Powder 4%-5% Rotenone
Cube Resins—Rotenone Content
Standardized
Derris Resins—Rotenone Content
Standardized
Rotenone Crystals C.P.
Rotenone Technical 90/95%
DDT Products

ORBIS ESSENTIAL OILS

Oil Anise
Oil Bay
Oil Birch
Oil Cedarleaf
Oil Cedarwood
Oil Cassia
Oil Cloves
Oil Eucalyptus
Oil Lemon
Oil Lemongrass

- Oil Limes
- Oil Orange
- Oil Peppermint
- Oil Petitgrain
- Oil Rosemary
- Oil Sassafras
- Oil Spearmint
- Oil Thyme—Red
- Oil Thyme—White
- Oil Wormseed

ORBIS AROMATIC CHEMICALS

Anethol	Isoeugenol
Carvacrol	Phellandrene
Citral	Safrol
Eucalyptol	Thymol
Eugenol	Chlorthymol
Heliotropine	Chlorcarvacrol

ORBIS PERFUME COMPOUNDS

**For Soap
Deodorants**

ORBIS GUMS

**Arabic
Karaya**

**COSMETIC RAW MATERIAL
WATER SOLUBLE GUMS
•ODD COLORS**

**PERFUME BASES
ESSENTIAL OILS
FRUIT FLAVORS**

**QUINCE SEED
OLEO RESINS
STEARIC ACID**

CHICAGO PHILADELPHIA MEXICO, D.F. BOSTON LOS ANGELES

ORBIS
PRODUCTS
CORPORATION

215 PEARL STREET, NEW YORK
FACTORY AND LABORATORY: NEWARK, N. J.

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WAXES
THYMOL
AROMATICS

MEMPHIS, TENN.

Foreword

THIS issue of the BLUE BOOK has been produced under the most difficult conditions in the twenty year history of its publication. The strike of New York typographers is responsible for the late appearance of this 1948 edition, and the difficult conditions resulting from the strike may well, we are afraid, have introduced numerous errors into listings and advertisements. For such errors as may have been inevitable under the circumstances, and for the delayed appearance of this year's BLUE BOOK, we offer our apologies.

It is our purpose, naturally, to make the BLUE BOOK a complete and accurate directory of suppliers to the soap and sanitary products trade, and with this idea in mind we have tried to secure complete listings from all recognized suppliers of whom we know. It is inevitable, of course, that some firms have been overlooked, and if you find that listings for your own firm are missing, are incomplete, or otherwise inaccurate, we shall appreciate your advising us at once so that any errors can be corrected before appearance of our next edition. Do not, however, ask us to list you except under items which you actually make, which you import directly, or for which you are sole selling agents for a manufacturer.

A special explanatory note may be in order on our listings of sup-

pliers of finished products,—bulk and private brand soaps and sanitary products. The BLUE BOOK listings are not intended to be complete lists of all manufacturers of such products, but are planned to be limited to firms specializing in bulk and private brand sale of such products. Wherever possible we have eliminated from these lists the names of manufacturers whose prime concern is the sale of such products direct to actual consumers. Please keep this in mind in checking questionnaires for the next edition of the BLUE BOOK.

In addition to its role as a buyers' guide, the BLUE BOOK also serves as a year book for the soap and sanitary chemical industry. Included in the appendix are resumes of association and government specifications and official testing methods, data on sales of soap, oil and fat consumption, fat salvage collections, names of association officers, etc. We will welcome suggestions from users of the BLUE BOOK as to what other types of reference material would be useful to them in a book of this type and will be glad to consider adding new features to our next edition.

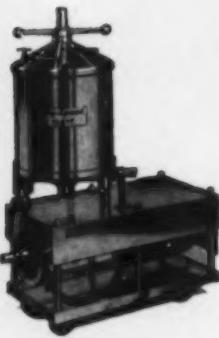
Replace your old 1947 BLUE BOOK with this new edition now,—and keep your current copy of the BLUE BOOK handy for ready reference! It contains the answers to many questions that will come up in the year ahead.

THE PUBLISHERS.

May 1, 1948

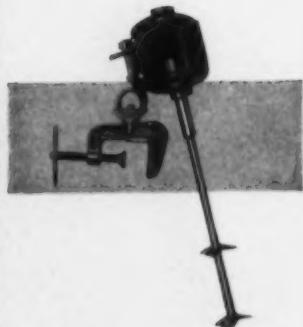
Alsop "HY-SPEED" Filters & Mixers

for dependable, low-cost,
time proven performance



"Sealed-Disc" Filters

Here's simplicity, portability and positive action in a single compact unit for removing dirt, sediment, etc., from all liquids. Its unique design assures unsurpassed performance with little or no supervision. You'll find this compact filter always ready for instant use, completely sealed, leak and drip-proof and easy to move to wherever needed. The entire filter can be taken apart for easy cleaning by simply removing the handle on top. The splash proof stand completely protects the built-in pump and motor from splashed or spilled liquids. Sizes range from 1 g.p.m. to thousands of g.p.h. and made of Stainless Steel, Monel Metal, Nickel Plated Brass and Bronze, etc.



"Hy-Speed" Portable Mixers

Our Portable Mixers of various sizes are meeting specific requirements with savings of time, labor and money in thousands of processing plants large and small. These low-priced mixers are sturdily constructed and simple to keep clean. Equipped with our easy-to-mount, quickly adjustable clamp, they make any tank a mixing tank or they can be attached to your present mixing tank to cut mixing time in half. Available in a wide range of horsepower, propeller combinations and speeds.



"Hy-Speed" Stationary Agitators

Our complete line of agitators include the vertical type for mounting through the top of tanks and the side-entering type for mounting through the side walls of large tanks, in sizes up to 50 h.p. for thorough mixing.

We are prepared to design special types for your specific conditions and requirements.



We can supply Neutral Asbestos Filter-Discs cut to fit practically all size and type filters.

Over 25 years' Service to you

For over 25 years manufacturers of soaps and sanitary products have relied on the consistent high standard of Alsop Filters and Mixers—and on the technical service of The Alsop Engineering Corporation to help maintain efficient and economical production.

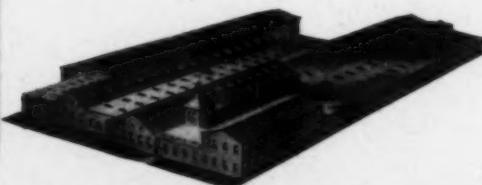
Filters and Mixers for all liquids

Our complete line of "Sealed-Disc" Filters are designed for all general batch or continuous filtration work on liquid soaps, insecticides, disinfectants, chemicals, drugs, alcohol, oils, acids, water, etc. Operation is instant and uniform and is equally effective for clarifying, final polishing or for removing turbid matter.

Alsop Neutral Filter Discs, the heart of Alsop Filters are made in eight different degrees of porosity, make available any degree of fineness of filtration your particular product may require.

Alsop "Hy-Speed" Mixers and Agitators are accepted as the standard of mixing efficiency wherever liquids are processed. Whether your operation involves mixing, blending, suspending or dissolving you can handle it simply and economically with a "Hy-Speed" Mixing Unit.

The diversity and completeness of our experience in Agitation and Filtration Engineering in all manufacturing and processing industries qualifies us to help you with your mixing and filtering operations. Call on us at any time, no obligation of course.



Our plant where "Sealed-Disc" Filters, Asbestos Discs and "Hy-Speed" Mixers are manufactured.

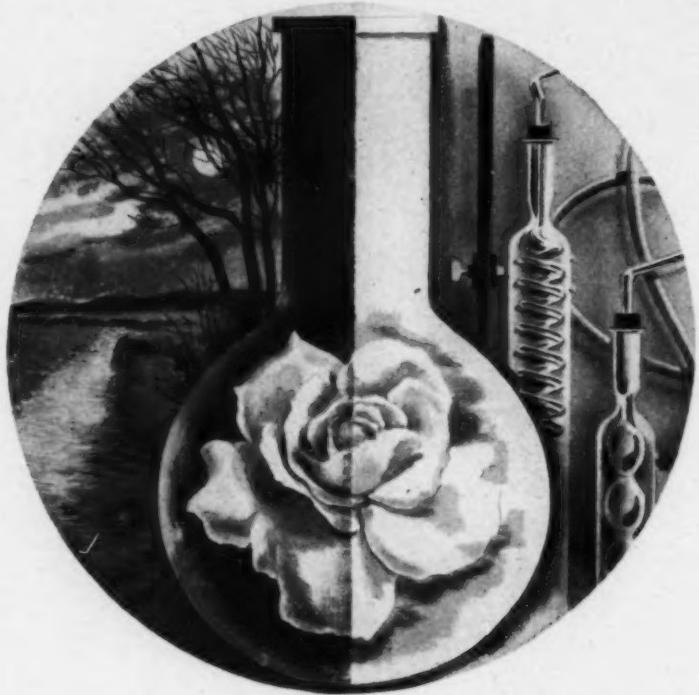
ALSOP
ENGINEERING CORPORATION

300 Green Street, Milldale, Connecticut

Buyers' Guide Section

LISTING SOURCES OF SUPPLY FOR RAW MATERIALS, MACHINERY AND EQUIPMENT BOUGHT BY MANUFACTURERS OF SOAPS AND SANITARY CHEMICALS.

Included in this section are the names of manufacturers of soaps and sanitary chemicals who sell private brand and bulk products to jobbers and distributors. It is not intended to list concerns who sell direct to consumers.



Dow Chemicals for the Soap Industry

Dow's array of materials for the soap and sanitary field ranges from fine Aromatics to the reliable "heavy" chemicals so essential to basic production operations. To aid the blender of scents, Dow is producing today a steady flow of aromatic products . . . provocative new materials as well as

the reliable, long-established products. Leading soap manufacturers look to Dow for the uniform product quality . . . the careful attention to delivery . . . that have been an integral part of Dow service for so many years. Additional information on any of these products is available on request.

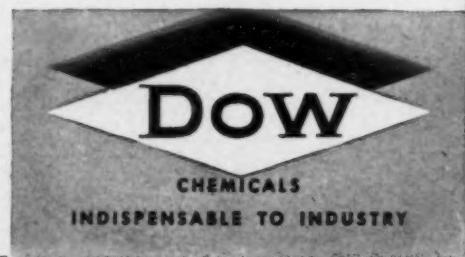
AROMATIC PRODUCTS: Coumarin, Cyclotene, C-64, C-66, Diphenyl Oxide, Diphenyl Methane, Gardanthrol, Indole, Methyl Anthranilate, Methyl Phenyl Carbonyl Acetate, Methyl Salicylate, Palatone, Phenethyl Acetate, Phenethyl Alcohol, Styrene P-100, Sylvenol, and others.

INDUSTRIAL CHEMICALS: Caustic Soda, Phenol, Aniline, Ferric Chloride, Dowtherm, Diethylene Glycol, Propylene Glycol.

ORGANIC SOLVENTS: Carbon Tetrachloride, Ethylene Dichloride, Propylene Dichloride, o-Dichlorobenzene, Perchloroethylene.

FUNGICIDES, FUMIGANTS, DISINFECTANTS: Dowicides, Methyl Bromide, Carbon Bisulfide, Chloropicrin, Paradow.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN
New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada



ABRASIVES AND FILLERS (Pumice, Silica, Feldspar, Bentonite, Clays, etc.)

American Colloid Co., 363 W. Superior St., Chicago
Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.
Attapulgus Clay Co., 210 W. Washington Sq., Phila.
California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 58 Park Pl., N. Y.
Dicalite Co., 120 Wall St., N. Y.
K. F. Griffiths Co., 110 E. 42nd St., N. Y.
Goris & Co., 8124 S. Hoyne Ave., Chicago
Hammill & Gillespie, 225 Broadway, N. Y.
Imperial Prods. Co., 1600 Fontain St., Phila.
Johns-Manville Corp., 22 E. 40th St., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
National Sawdust Co., 69 N. 6th St., Bklyn.
Natura Minerals Co., 108 W. 6th St., Los Angeles
Pacific Coast Pumice Co., Bishop, Calif.
Philadelphia Quartz Co., 125 S. 3rd St., Phila.
Pumice Corp. of America, Grants, N. M.
Jas. H. Rhodes & Co., 157 W. Hubbard St., Chicago
Wm. R. Rogers, 44 Woodman St., Lynn, Mass.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
F. E. Schundler & Co., Inc., 524 Railroad St., Joliet, Ill.
A. E. Starkie, 5461 W. Division St., Chicago
Tamma Silica Co., 229 N. La Salle St., Chicago
United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Whittaker Clark & Daniels, 260 W. B'way, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

ACETONE (see also Dealers)

J. T. Baker Chem. Co., Phillipsburg, N. J.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Cliffs-Dow Chemical Co., Marquette, Mich.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
E. I. Du Pont de Nemours, Wilmington, Del.
Wm. S. Gray & Co., 342 Madison Ave., N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis, 4
Shell Chemical Corp., 100 Bush St., San Francisco
U. S. Industrial Chem., Inc., 60 E. 42nd St., N. Y.

ACIDS (Sulfuric, Muriatic, Nitric, Acetic, Etc.)

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Atlas Powder Co., Wilmington, Del.
J. T. Baker Chemical Co., Phillipsburg, N. J.
Blockson Chem. Co., Joliet, Ill.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Hercules Powder Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y. (Muriatic)
Innis, Speiden & Co., 117 Liberty St., N. Y.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
A. R. Maas Chem. Co., 4570 Ardine St., So. Gate, Calif.
Merck & Co., Rahway, N. J.
Michigan Chem. Corp., St. Louis, Mich.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Oronite Chem. Co., 200 Bush St., San Francisco
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Rumford Chem. Wks., Rumford, R. I.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.

ACTIVATED CARBONS, (see Bleaching Earths, Decolorizing Carbons)

ADHESIVES

Arabol Mfg. Co., 110 E. 42nd St., N. Y.
Armour Glue Wks., 1355 W. 31st St., Chicago
Bakelite Corp., 30 E. 42 St., N. Y.

Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Casein Co. of America, Bainbridge, N. Y.
Darling & Co., 4201 S. Ashland, Chicago
Dennison Mfg. Co., Framingham, Mass.
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
E. I. Du Pont de Nemours & Co., Wilmington, Del.
W. H. Gage Glue Co., 19 S. Main St., St. Louis
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Hercules Powder Co., Wilmington, Del.
Arnold Hoffman Co., Providence, R. I.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Adhesives Corp., 270 Madison Ave., N. Y.
National Starch Products, Inc., 270 Madison Ave., N. Y.
Nopco Chemical Co., Harrison, N. J.
Philadelphia Quartz Co., 125 S. 3rd St., Philadelphia
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Sanford Mfg. Co., W. Congress & Peoria St., Chicago
Satisfaction Supply Co., 508 W. Broadway, N. Y.
A. E. Staley Mfg. Co., Decatur, Ill.
Stein, Hall & Co., 285 Madison Ave., N. Y.
Swift & Co., Chicago

AEROSOL DISPERSANTS

General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y. 6
Kinetic Chemicals, Inc., Wilmington

AEROSOL FILLING

Associated Chemists, Inc., 1906 N. Halstead St., Chicago
Continental Filling Corp., 123 N. Hazel St., Danville, Ill.
Industrial Management Corp., 458 S. Spring St., Los Angeles
Regal Chem. Corp., Bklyn., 22, N. Y.

AEROSOL INSECTICIDES (Containers and Dispensing Units)

Associated Chemists, Inc., 1906 N. Halstead St., Chicago
Bridgeport Brass Co., Bridgeport 2, Conn.
Continental Can Co., 100 E. 42nd St., N. Y.
Edco Corp., Elkton, Md.
Eston Chems., Inc., 3100 E. 26 St., Los Angeles
Industrial Management Corp., 458 S. Spring St., Los Angeles 13, Cal.
Regal Chemical Corp., Bklyn. 22, N. Y.
Salkover Metal Processing Co., Dixie Term. Bldg., Cincinnati
Sparklet Devices, Inc., 272 Badger Ave., Newark 8, N. J.
Virginia Smelting Co., W. Norfolk, Va.

AGITATORS

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Alsop Engineering Corp., Milldale, Conn.
Amer. Machine & Foundry Co., 511—5th Ave., N. Y.
Beach-Russ Co., 50 Church St., N. Y.
Brill Equipment Co., 225 W. 34th St., N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Ertel Engineering Corp., Kingston, N. Y.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Foster Pump Works, 50 Washington St., Brooklyn
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 258 46th St., Brooklyn
J. M. Lehmann Co., Lyndhurst, N. J.
Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., Inc., 1067 Garson Ave.
Rochester, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago, Ill. (Used)
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy. Co., York, Pa.
Scientific Filter Co., 1 Franklin Sq., N. Y.
Ernest Scott & Co., P. O. Box 82, Fall River, Mass.
Sowers Mfg. Co., 1296 Niagara St., Buffalo
Sprout Walron & Co., Muncy, Pa.
Stein Equipment Corp., 90 West St., N. Y. C. (Used)
Struthers-Wells Titusville Corp., Warren, Pa.

Insecticide Manufacturers are cashing in on these **POWCO BASIC MATERIALS** — How About You?

HOUSEHOLD INSECTICIDE CONCENTRATES

Pyrethrum and DDT base insecticide concentrates for every household use. Investigate Pyrin — pyrethrum concentrate with added killing power; synergized with Sesamin.

RODENTICIDES

Powco Brand ANTU—Alpha Naphthyl Thiourea—the new wonder rodenticide. Economical, effective and deadly. Acceptable to rats, easy to use in baits, on water or as a tracking poison.

AEROSOL FORMULAS

Powell has specialized in aerosols since the first aerosol bomb. Completed aerosol formulas with pyrethrum and DDT—high or low pressure. Synergized with Sesamin for greater killing power at lower cost.

AGRICULTURAL INSECTICIDE CONCENTRATES

There is a Powco Brand insecticide concentrate for every agricultural use. DDT, Pyrethrum, Rotenone, BHC, HETP and Sabadilla products. Name your insecticide problem and we'll name the insecticide.

HERBICIDES

2,4-D (2,4-dichlorophenoxyacetic acid) in easy-to-use Powco formulations for the latest in selective weed killing. Let Powell solve your weed control problems. Investigate Powco Brand 2,4-D.

HOW WE REMOVE THE RISK

Chemically controlled and biologically standardized, Powco Brand products are manufactured to the most rigid specifications for your protection. Our labs test before we ask you to buy.

John Powell & Co., Inc.

ONE PARK AVENUE •

NEW YORK 16, N. Y.

SALES OFFICES: CHICAGO - SAN FRANCISCO - PITTSBURGH - PHILADELPHIA - ST. LOUIS

CANADA: CHARLES ALBERT SMITH, LTD., TORONTO - MONTREAL

In Argentina — John Powell Y CIA, Condarco 1535, Buenos Aires, Argentina. Telephone 59, Paternal 0021.

POWCO BRAND PRODUCTS: Antu - Pyrin R - Pyrin D-20 - JP No. 10 - JP No. 25 - JP No. 30 - JP No. 50 - IP No. 50W - Pyrethrum Powders and Extracts - Stimox "A" - Rotenone Powders - Sabadilla - Aerosol Formulas - 2,4-D - BHC (Benzene Hexachloride) - HETP (Hexethyl Tetraphosphate).

AGRICULTURAL INSECTICIDES

Agicide Laboratories, 1717 Taylor Ave., Racine, Wis.
Aluminum Co. of America, Gulf Bldg., Pittsburgh
American Agricultural Chem. Co., 50 Church St., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Associated Chemists, Inc., 1906 N. Halsted St., Chicago
J. T. Baker Chem. Co., Phillipsburg, N. J.
Bowker Chemical Co., 50 Church St., N. Y.
California Spray Chemical Corp., Richmond, Calif.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chem. Mfg. & Dist. Co., Easton, Pa.
Chipman Chemical Co., Bound Brook, N. J.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
Eston Chems., Inc., 3100 E. 26 St., Los Angeles
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Filtrol Corp., 634 S. Spring St., Los Angeles
Geigy Co., 89 Barclay St., N. Y.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Griffin Chem. Co., 1000 16th St., San Francisco
Hercules Powder Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Julius Hyman & Co., Denver, Colo.
Industrial Management Corp., 458 S. Spring St., Los Angeles
Koppers Co., White Tar Div., Kearny, N. J.
Lorenz Chemical Co., 135 N. 32nd Ave., Omaha
McLaughlin, Gormley King Co., 1715—5th St., S. E. Minneapolis
Merck & Co., Rahway, N. J.
Michigan Chem. Corp., St. Louis, Mich.
Miller Products Co., 1932 S. W. Water Ave., Portland, Ore.
Neville Co., Neville Island, Pittsburgh
Nopco Chem. Co., First & Essex Sts., Harrison, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
S. B. Penick & Co., 50 Church St., N. Y.
Pennsalt Mfg. Co., 1000 Widener Bldg., Phila.
Richards Sales Corp., Warren & Morris Sts., Jersey City, N. J.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis, Mo.
Sherwin-Williams Co., Cleveland, Ohio
L. Sonnenborn Sons, 88 Lexington Ave., N. Y.
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Thompson-Hayward Chem. Co., Kansas City, Mo.
Tobacco By-Products & Chem. Corp., Louisville, Ky.
James Varley & Sons, 1200 Switzer Ave., St. Louis
Whitmire Research Corp., 339 S. Vandeventer, St. Louis
Woburn Chemical Corp., Harrison, N. J.
G. H. Wood & Co., Toronto, Ont., Canada
York Chem. Co., 23 Dean St., Brooklyn.

AGRICULTURAL INSECTICIDE SPREADERS

Alrose Chem. Co., Box 1294, Providence, R. I.
Aluminum Ore. Co., Gulf Bldg., Pittsburgh
American Colloid Co., 363 W. Superior St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Attapulgus Clay Co., 210 W. Washington Sq., Phila.
Atlantic Refining Co., 260 South Broad St., Phila.
Atlas Powder Co., Wilmington, Del.
California Industrial Minerals Co., Friant, Calif.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Colloidal Products Corp., 2598 Taylor St., San Francisco, Cal.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Dicalite Co., 120 Wall St., N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Eastern Magnesia Tale Co., Burlington, Vt.
Emulsol Corp., 59 E. Madison St., Chicago
Griffin Chem. Co., 1000 16th St., San Francisco
Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
Kessler Chem. Co., 7272 State Rd., Phila.

Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Nopco Chemical Co., Harrison, N. J.
Richards Sales Corp., Jersey City, N. J.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
F. E. Schundler & Co., 508 Railroad St., Joliet, Ill.
K. T. Vanderbilt Co., 230 Park Ave., N. Y.

ALCOHOL (Ethyl and Denatured)

(see also Dealers)

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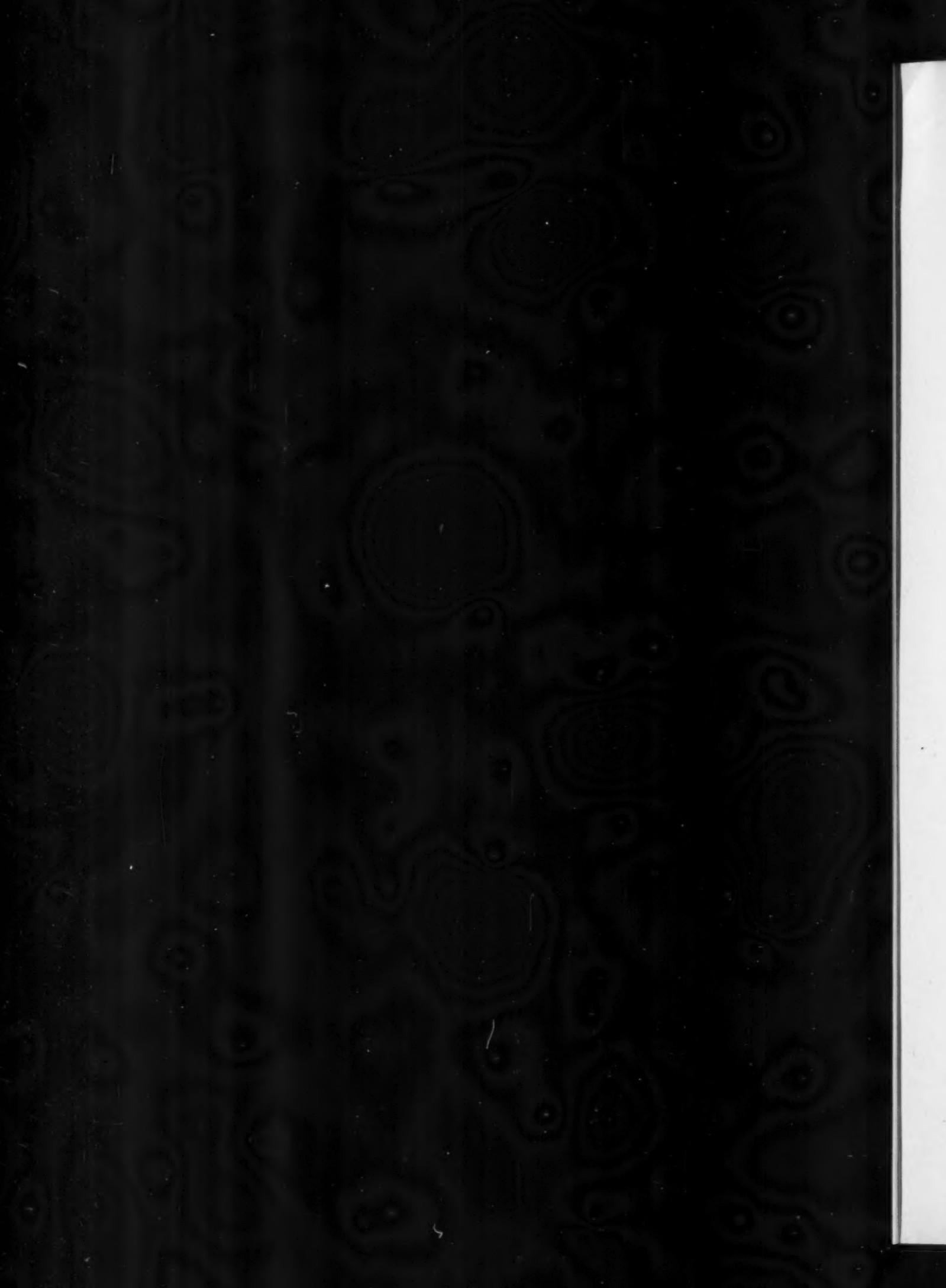
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Schmidt Soap Products, 236 W. North Ave., Chicago
Schratz, Inc., 534 W. Congress, Detroit
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y. (Unperfumed)
Trio Chem. Wks., 341 Scholes St., Bklyn.
Welch, Holme & Clark Co., 439 West St., N. Y.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

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Lanman & Kemp-Barclay Co., 135 Water St., N. Y.
McKesson & Robbins, 155 E. 44th St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
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Tombarel Products Corp., 12 E. 22nd St., New York
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Scollay Sprinkler & Bulb Co., Box 46, Sta. F., Bklyn.
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Chas. B. Chrystal Co., 53 Park Pl., N. Y.
Filtrol Corp., 634 S. Spring St., Los Angeles
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Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Heyden Chem. Co., 50 Union Sq., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
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Falls, N. Y.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
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Stauffer Chemical Co., 420 Lexington Ave., N. Y.
Westvaco Chlorine Products Corp., 405 Lexington Ave.,
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Pittsburgh Plate Glass Co., Columbia Chemical Div.,
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Sergeant Chem. Co., 7 Dey St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
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Chas. B. Chrystal Co., 53 Park Pl., N. Y.
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Mathieson Chemical Corp., 60 E. 42nd St., N. Y.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
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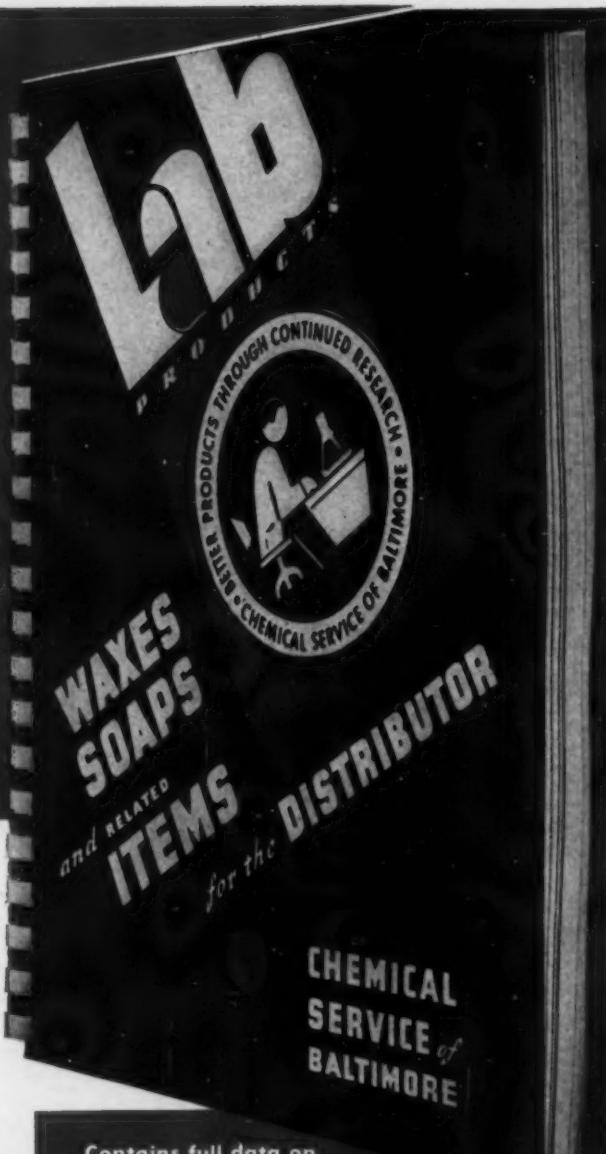
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Continental Can Co., Inc., 100 E. 42nd St., N. Y.
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Middlesex Paper Tube Co., 342 Madison Ave., N. Y.
National Can Co., 110 E. 42nd St., N. Y.
Owens-Illinois Can Co., Toledo, O.
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R. C. Can Co., 121 Chambers St., St. Louis
W. C. Ritchie & Co., 8801 S. Baltimore Ave., Chicago
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Columbian Can Co., 315 Wyckoff Ave., Brooklyn
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National Can Co., 110 E. 42nd St., N. Y.
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Standard Container, Inc., Bloomfield, N. J.
Vulcan Tin Can Co., Bellwood, Ill.

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Anchor Hocking Glass Corp., Lancaster, Ohio

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First Machy. Corp., 157 Hudson St., N. Y. (Used)
R. G. Haskins Co., 615 S. California St., Chicago
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati, Ohio
Ludeke Co., 41 N. Beacon St., Watertown, Mass.
M. R. M. Co., 191 Berry St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago
Pneumatic Scale Corp., North Quincy, Mass.
Scientific Filter Co., 1 Franklin Sq., N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)
Triangle Package Machy. Co.,
910 N. Spaulding Ave., Chicago
U. S. Bottlers Machy. Co., 4015 N. Rockwell St., Chicago

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Anchor Hocking Glass Corp., Lancaster, Ohio
Aridor Co., 3428 W. 48th Place, Chicago
Crown Cork Specialty Corp., Decatur, Ill.
Du Pont Cellophane Co., 2 Park Ave., N. Y.
Sylvania Industrial Corp., Chanin Bldg., N. Y.

CAPS (Molded)

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
General Plastics, Inc., N. Tonawanda, N. Y.
Owens-Illinois Glass Co., Toledo, Ohio
Resinox Corp., Terre Haute, Ind.
Toledo Synthetic Prods. Co., Toledo, Ohio

CAPS (Metal)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Anchor Hocking Glass Corp., Lancaster, Ohio
Aridor Co., 3428 W. 48th Place, Chicago
Armstrong Cork Co., Lancaster, Pa.
Cans, Inc., 3217 W. 47th Pl., Chicago
Closure Service Co., Toledo, Ohio
Continental Can Co., 100 E. 42nd St., N. Y.
Crown Cork & Seal Co., Eastern Ave. & Kresson St.,
Baltimore
George D. Ellis Sons, 309 N. 3rd St., Phila.
National Can Co., 110 E. 42nd St., N. Y.
National Seal Co., 14th Ave. & 37th St., Brooklyn
Owens-Illinois Glass Co., Toledo, Ohio
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago

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E. I. Du Pont de Nemours & Co., Wilmington, Del.
Merck & Co., Rahway, N. J.
Penn. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Westvaco Chlorine Prods., 405 Lexington Ave., N. Y.

CARBON TETRACHLORIDE

(see also Dealers)

J. T. Baker Chemical Co., Phillipsburg, N. J.
Brown Co., Portland, Me.
Diamond Alkali Corp., 535 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.

Niagara Smelting Corp., Niagara Falls, N. Y.
Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
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Hornney & Co., 420 Lexington Ave., N. Y.
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, Ohio
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
A. H. Ross & Co., P. O. Box 998, Dayton, O.
Stein Equipment Corp., 90 West St., N. Y. (Used)
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Gardner-Richardson Co., Middletown, Ohio
Nevins-Church Co., 250 Park Ave., N. Y.
New England Card & Paper Co., Springfield, Mass.
Pictorial Package Co., Aurora, Ill.
Randolph Box & Label Co., 848 W. VanBuren St., Chicago
W. C. Ritchie & Co., 8855 S. Baltimore Ave., Chicago
Robertson Paper Box Co., Inc., Montville, Conn.
George Schmitt & Co., Grand & Florence Sts., Brooklyn
Sutherland Paper Co., Kalamazoo, Mich.
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Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Enco Chem. Corp., 441 Lexington Ave., N. Y.
Hercules Powder Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Land-o-Lakes Creameries, Minneapolis
National Casein Co., 603 W. 80th St., Chicago
Sergeant Chem. Co., 7 Dey St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

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CASES (Corrugated) (see Boxes)

CASSIA OIL (see Essential Oils)

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Conti Products Corp., 48 Clinton Ave., Bklyn.
Haskins Bros. & Co., Omaha
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Kranich Soap Co., 54 Richards St., Brooklyn
Lockwood-Brackett Co., Waltham Station, Boston
Los Angeles Soap Co., Los Angeles, Calif.
Newell Gutradt Co., 350 Fremont St., San Francisco
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Ivorydale, O.
Sanitary Soap Co., 104 Railroad Ave., Paterson
Schmidt Soap Products, 236 W. North Ave., Chicago
Solshine Mfg. Co., 412 2nd St., Fall River, Mass.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Bklyn.
Swift & Co., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

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Antiseptol Co., 5524 Northwest Highway, Chicago
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Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Haag Laboratories, Inc., 140th & Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 932 W. 38th Place, Chicago
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
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Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
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Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co.,
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Schmidt Soap Products, 236 W. North Ave., Chicago
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Tech. Soap Mfg. Co., 125 W. 46th Pl., Chicago
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J. A. Tumbler Labs., 423 Hanover St., Baltimore
Superior Soap Corp., 121 Nostrand Ave., Bklyn.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Uncle Sam Chem. Co., 575 W. 131 St., N. Y.
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(see also Dealers)

Archer-Daniels-Midland Co., Minneapolis
Baker Castor Oil Co., 120 Broadway, N. Y.
Balfour, Guthrie & Co., 67 Wall St., N. Y.
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Ottie A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N. Y.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco

J. H. Redding, Inc., 17 Battery Place, N. Y.
Rosenthal-Berow Co., 25 E. 26th St., N. Y.
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.

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Aluminum Co. of America, Gulf Bldg., Pittsburgh
Atapulgus Clay Co., 210 W. Washington Sq., Phila.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Filtrol Corp., 634 So. Spring St., Los Angeles
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Harshaw Chem. Co., Cleveland
Hooker Electrochemical Co., Niagara Falls, N. Y.
Johns-Manville Corp., 22 E. 40th St., N. Y.
Oronite Chem. Co., 200 Bush St., San Francisco
Rufert Chem. Co., 420 Lexington Ave., N. Y.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

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(see also Sheep Dips)

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Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chem. Service Co. of Balto, Howard & West Sts., Balto.
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Chipman Chem. Co., Bound Brook, N. J.
Clifton Chemical Co., 62 William St., N. Y.
Corn King Co., Cedar Rapids, Ia.
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., 4 Payson Ave., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, 140 Liberty St., N. Y.
Haag Laboratories, Inc., Blue Island, Ill.
Harrison Oil Co., 5110 N. 35th St., Milwaukee
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Hunt Mfg. Co., Lisbon Rd., Cleveland
William E. Jordan & Bros., 2590 Atlantic Ave., Brooklyn
Kemico Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
J. E. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Ketoid Chem. Co., 339 S. Van Deventer, St. Louis
Koppers Co., White Tar Div., Kearney, N. J.
Lakeland Labs., 625 15th Ave. South, Minneapolis
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
McLaughlin, Gormley, King Co., Minneapolis, Minn.
Michigan Chem. Corp., St. Louis, Mich.
Nopco Chemical Co., Harrison, N. J.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prod. Co., 610 E. Clarence Ave., St. Louis
Pennia Salt Mfg. Co., Widener Bldg., Phila.
Pumice Corp. of America, Grants, N. M.
Rex Research Corp., Toledo
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
St. Lawrence Chem. Co., Ogdensburg, N. Y.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Stauffer Chemical Co., 420 Lexington Ave., N. Y.
Texas Soap Mfg. Corp., 4905 Calhoun Road, Houston
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.
Tobacco By-Products & Chem. Corp., Louisville, Ky.
Uncle Sam Chem. Co., 575 W. 131st St., N. Y.

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James Varley & Sons, 1200 Switzer Ave., St. Louis
Universal Chem. Corp., Akron, O.
Velocil Corp., 120 E. Pearson St., Chicago
Victory Chem. Co., 148 Fairmont Ave., Phila.
T. F. Washburn Co., 2244 Elston Ave., Chicago
Robert C. White Co., Chestnut Hill, Phila.
Whitmire Res. Labs., 339 S. Vandeventer, St. Louis

Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Southern Alkali Corp., Corpus Christi, Tex.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Welch, Holme & Clark, 439 West St., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
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CAUSTIC POTASH (see Potash, Caustic)

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(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Belle Alkali Co., Belle, W. Va.
Brown Company, Portland, Me.
Champion Fibre Co., Canton, N. C.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kimberley-Clark Paper Co., Neenah, Wis.
Mathieson Chemical Co., 60 E. 42nd St., N. Y.
Merck & Co., Rahway, N. J.
Michigan Electrochemical Co., Menominee, Mich.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis 4
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Niagara Smelting Corp., Niagara Falls, N. Y.
Oxford Paper Co., White Mountains, N. H.
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
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CEDAR LEAF OIL (see Essential Oils)

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CHALK (Calcium Carbonate)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
H. J. Baker & Bro., 271 Madison Ave., N. Y.
Binney & Smith Co., 41 E. 42nd St., N. Y.
Charles B. Chrystal Co., 53 Park Pl., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Fezandie & Sperrle, 205 Fulton St., N. Y.
E. Fougera & Co., 41 Maiden Lane, N. Y.
Goris & Co., 8124 S. Hoyne Ave., Chicago
K. F. Griffiths Co., 110 E. 42nd St., N. Y.
Hammill & Gillespie, 225 Broadway, N. Y.
Charles Hardy, Inc., 415 Lexington Ave., N. Y.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Tamma Silica Co., 228 N. LaSalle St., Chicago
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Great Eastern Sponge & Chamois Co., 833 N. Patt. Pk.
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Huber Machine Co., 259-46th St., Brooklyn
J. M. Lehmann Co., Lyndhurst, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Proctor & Schwartz, 7th St. & Tabor Rd., Philadelphia
C. G. Sargent's Sons Corp., Graniteville, Mass.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Machine Co., 5974 E. Tabor Rd., Phila.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

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Chem. Mfg. & Dist. Co., Easton, Pa.
Chicago Sanitary Products Co., 3100 S. Throop St., Chicago
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Du Bois Soap Co., Cincinnati, Ohio
J. Eavenson & Sons, Camden, N. J.
Haskins Bros. & Co., Omaha
Hewitt Soap Co., Dayton, Ohio
R. M. Hollingshead Corp., Camden, N. J.
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Milling & Chem. Co., Manayunk, Phila.
Nopco Chemical Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schmidt Soap Products, 236 W. North Ave., Chicago, Ill.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Warren Soap Mfg. Co., 51 Warren St., Cambridge, Mass.
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Attaclay has earned a firm place in many dust formulas. Its fine service to users, its widespread acceptance all add up to a simple truth—it will pay *you* to test Attaclay.

MINERALOGICAL SOURCE	Attapulgite, an aluminum magnesium silicate.
COLOR	Light grey cream.
HARDNESS	Non-abrasive. Does not induce abnormal wear on manufacturing or applying equipment.
BULK DENSITY	27-31 lbs./cu.ft.
FINENESS	85% through 325 mesh. 1-2 microns (surface mean diameter, by air permeation method).
PARTICLE SHAPE	Spicular.
pH	Neutral.
ADSORPTIVITY	Permits making highest-percentage concentrates or finished dusts with chlorinated camphene, benzene hexachloride, chlordane, DDT, etc. Simplifies superfine grinding or mixing.
WETTABILITY	Attaclay has inherent wetting action on "hard-to-wet" toxicants.
SUSPENDABILITY	Within the required range. Readily modified to meet specific formula needs.
FLOWABILITY	Attaclay's freedom from caking and lumping means ease of handling. It insures trouble-free flow through processing and dispersing equipment.
DUSTABILITY	Excellent characteristics as regards carrying power, even coverage ability, tenacity.
COMPATIBILITY	Attaclay's high degree of chemical compatibility is well-established.
USES	Insecticide or fungicide dust bases, wettable powders and finished dusts. Herbicides and plant hormone dusts. Carrier for impregnated liquid toxicants.

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E. I. Du Pont de Nemours Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Matheson Chemical Co. 60 E. 42nd St., N. Y.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div.,
Grant Bldg., Pittsburgh
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Universal Chlorinator Co., 3418 W. Pico Blvd., Los
Angeles
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div.,
Wyandotte, Mich.

CHLORINE DISINFECTANTS (see Disinfectants)

CHLOROFORM

J. T. Baker Chem. Co., Phillipsburg, N. J.
Brown Company, Portland, Me.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Malinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Rahway, N. J.
Niagara Smelting Corp., Niagara Falls, N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.

CHLOROPHYLL (see also Essential Oils)

A. C. Drury & Co., 219 E. North Water St., Chicago
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Interstate Color Co., 5 Beekman St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Merck & Co., Rahway, N. J.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Pylam Products Co., 799 Greenwich St., N. Y.
Sandoz Chem. Works, Inc., 61 Van Dam St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.

CITRAL (see Aromatic Chemicals)

CITRONELLAL (see Aromatic Chemicals)

CITRONELLA OIL (see Essential Oils)

CITRONNELLOL (see Aromatic Chemicals)

CLAYS

(see also Bleaching Earths)

American Colloid Co., 363 W. Superior St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller
Plaza, N. Y.
Atlantic Refining Co., 260 S. Broad St., Phila.
Attapulgus Clay Co., 210 W. Washington Sq., Phila.
California Industrial Minerals Co., Friant, Calif.
Charles B. Chrystal Co., 53 Park Pl., N. Y.
Dicalite Co., 120 Wall St., N. Y.
Fezandie & Sperrle, 205 Fulton St., N. Y.
Filtrol Corp., 634 S. Spring St., Los Angeles
Floridan Co., 220 Liberty St., Warren, Pa.
Goris & Co., 8124 S. Hoyne Ave., Chicago
Hammill & Gillespie, 225 Broadway, N. Y.
Hercules Powder Co., Wilmington, Del.
J. M. Huber, Inc., 620 62nd St., Brooklyn
Illinois Silica Co., Cairo, Ill.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.



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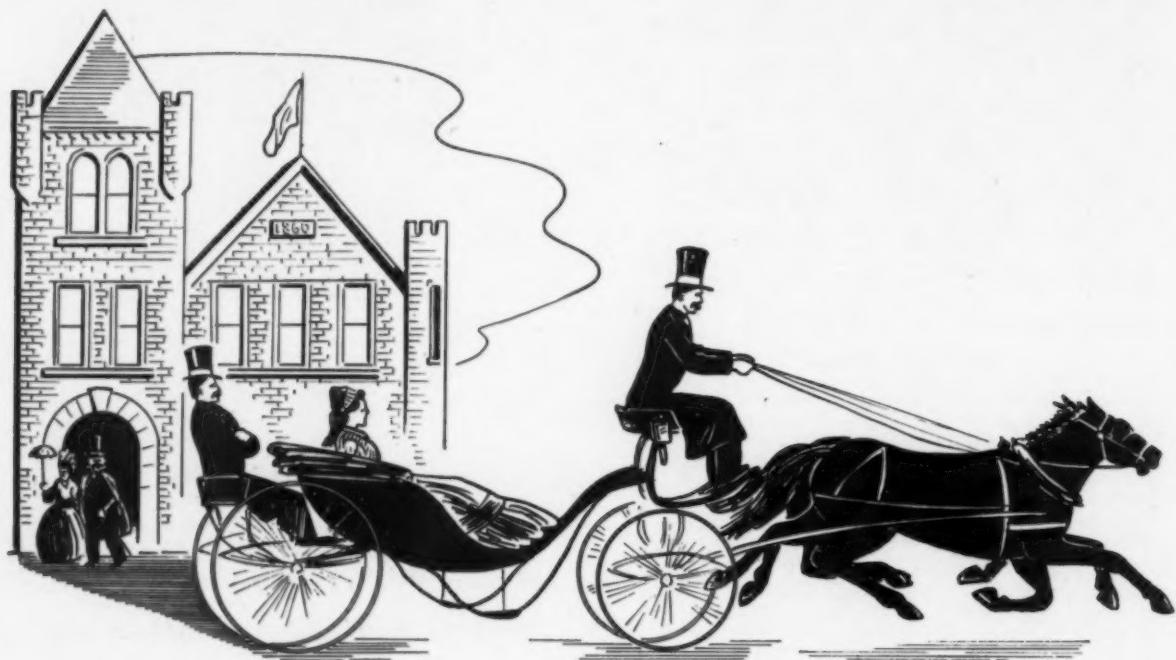
- Emulsifies oil, greasy soil and bitumens
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- Absorbs certain proteins, also carbon
- Mild. The pH is 9 to 9.5
- Slightly zeolitic—absorbs calcium, gives up sodium ions

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National Sales Corp., 33 E. 13th St., Cincinnati
Owyhee Chemical Products Co., 300 W. Adams St., Chicago
Peerless Clay & Mineral Co., Pueblo, Colo.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
F. E. Schundler & Co., Joliet, Ill.
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
A. E. Starkie Co., 5461 W. Division St., Chicago
Tammis Silica Co., 228 N. LaSalle St., Chicago
United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.
Wyodak Chem. Co., 4600 E. 71st St., Cleveland

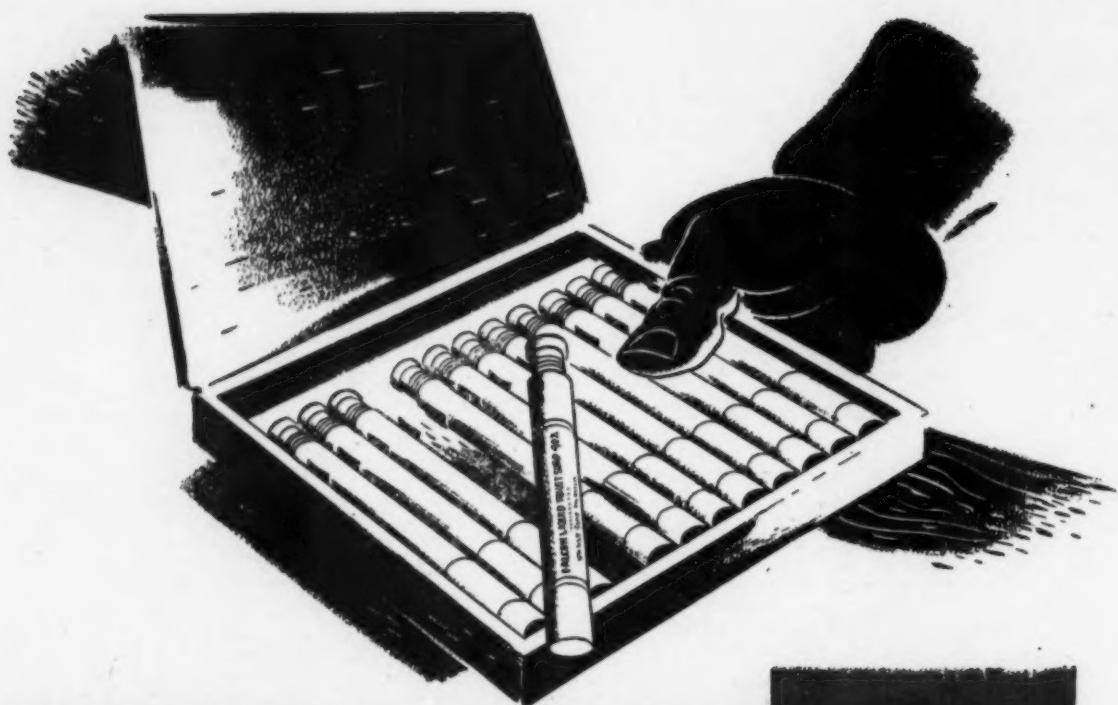
CLEANERS, LIQUID (see also Floor Scrub Soaps, also Cleaning Fluids)

Alrose Chem. Co., Box 1294, Providence, R. I.
American Chemical Paint Co., Ambler, Pa.
American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 47-02 5th St., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st, Chicago
Baird & McGuire, Inc., Holbrook, Mass.
Banner Chem. Prods. Co., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 138th St., N. Y.
Buckingham Wax Co., 51-03 Van Dam St., L. I. City, N. Y.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co., Baltimore 30, Md.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Curran Corp., Lawrence, Mass.
Davies-Young Soap Co., Dayton, Ohio
Delta Chemical Co., 4 Payson Ave., N. Y.
Divernay Corp., 53 W. Jackson Blvd., Chicago
Eagle Soap Corp., Huntington, Ind.
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Franklin Research Co., 5134 Lancaster Ave., Phila., Pa.
Fuld Bros., 702 So. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City
Gleamite Co., Coudersport, Pa.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hang Laboratories, Inc., 140th & Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Hercules Chem. Co., 332 Canal St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco, Cal.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, Ohio
James Huggins & Son, Malden, Mass.
Hull Co., 305 Washington St., Brooklyn
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
Industrial Chem. Prods. Co., Comm. Trust Bldg., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Klix Chem. Co., 2460 Third St., San Francisco
Kopfers Co., White Tar Div., Kearney, N. J.
La Maison Prods., Inc., 80 York St., Brooklyn
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.

Los Angeles Soap Co., 617 E. 1st St., Los Angeles
M. & H. Laboratories, 2703 Archer Ave., Chicago
Manhattan Kreole Prods., 172 N. 10 St., Brooklyn
M. Michel & Co., 90 Broad St., N. Y.
Midland Labs., Dubuque, Iowa
Miranol Chem. Co., P.O. Box 118, Milltown, N. J.
Multi-Clean Prods., Inc., 2277 Ford P'kway, St. Paul, Minn.
Mutual Chem. & Supply Co., 257 W. Gay St., Columbus, Ohio
Nopco Chemical Co., Harrison, N. J.
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Oronite Chemical Co., 200 Bush St., San Francisco
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Pennsylvania Refining Co., Butler, Pa.
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Puritan Chem. Co., Atlanta, Ga.
Rex-Cleanwall Corp., Brazil, Ind.
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Richard's Sales Corp., Warren & Morris Sta., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Sanitary Prods. Co., 874 Seward St., Rochester, N. Y.
Rohm & Haas Co., 222 W. Washington Sq., Philadelphia
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Slick-Shine Co., 207 Astor St., Newark, N. J.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solshine Mfg. Co., 423 Second St., Fall River, Mass.
L. Sonneborn Sons, 88 Lexington Av., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Tech. Soap Co., 125 W. 46th Place, Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.
Transmotive Laboratories, 2550 S. Michigan Ave., Chicago
Trio Chem. Wks., 341 Scholes St., Bklyn.
Twi-Laq Chem. Co., 25 N. Portland Ave., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., Box 1536, Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., New York City
U. S. Sanitary Spec. Corp., 435 So. Western Ave., Chicago
Universal Chem. Corp., Akron, O.
James Varley & Sons, 1200 Switzer Ave., St. Louis
Victory Soap & Chem. Co., 252-58 Third St., Bklyn.
Windsor Wax Co., 611 Newark St., Hoboken, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
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CLEANING COMPOUNDS, DRY

Alrose Chem. Co., Box 1294, Providence, R. I.
American Soap & Washoline Co., Cohoes, N. Y.
American Chemical Paint Co., Ambler, Pa.
Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Axton-Cross Co., Cheshire, Conn.
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Blockson Chemical Co., Joliet, Ill.
Bonewitz Chemicals, Inc., Burlington, Ia.
Brilco Laboratories, 947-61st St., Brooklyn, N. Y.
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
California Industrial Minerals Co., Friant, Calif.
Philip Carey Mfg. Co., Lockland, Cincinnati
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & Fast Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chem. Co., 62 William St., N. Y.
Cole Labs., 22-19-37th Ave., Long Island City
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Cudahy Packing Co., 221 N. LaSalle St., Chicago
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
Diversey Corp., 53 W. Jackson Blvd., Chicago
Eagle Soap Corp., Huntington, Ind.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Filtrol Corp., 534 S. Spring St., Los Angeles
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaskill Products, 9 S. Letitia St., Phila.
Gaylord Chem. Co., 505 W. 5th St., Kansas City, Mo.
James Goed, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Haesuer Shellac Co., 52 Warren St., Brooklyn, N. Y.
Hercules Chem. Co., 332 Canal St., New York
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hyasan Prods. Co., 932 W. 38th Place, Chicago
Imperial Products Co., 1800 Fountain St., Phila.
Industrial Chem. Prods. Co., Comm. Trust Bldg., Phila.
J. Chemical Works, 602 W. 37th St., N. Y.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Klix Chem. Co., 2460 Third St., San Francisco
H. Kohnstamm & Co., 91 Park Pl., N. Y.
J. S. Lawston Co., 8 Henshaw St., N. Y.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Los Angeles Soap Co., Los Angeles, Calif.
M. & H. Laboratories, 2703 Archer Ave., Chicago
Mackenzie Laboratories, Front & Yarnall St., Chester, Pa.
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
M. Michel & Co., 90 Broad St., N. Y.
Midland Labs., Dubuque, Iowa
Midway Chemical Co., 5235 W. 65th St., Chicago
Miranol Chemical Co., P. O. Box 118, Milltown, N. J.
Mutual Chem. & Supply Co., 257 W. Gay St., Columbus, Ohio
Naphole, Inc., 15 E. 26th St., New York
Nat'l Milling & Chem. Co., Manayunk, Phila.
Nopco Chemical Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Oronite Chemical Co., 200 Bush St., San Francisco
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Peck's Prod. Co., 610 E. Clarence Ave., St. Louis
Penn. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Philadelphia Quartz Co., 125 S. 3rd St., Phila.
Phipps Products Co., 30 Huntington Ave., Boston
Pittsburgh Plate Glass Co., Columbia Chem. Div., Grant Bldg., Pittsburgh
Port Huron Detergent Co., Port Huron, Mich.
Puritan Chem. Co., Atlanta, Ga.
Rex-Cleanwall Corp., Brazil, Ind.
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Richards Chem. Wks., Warren & Morris Sts., Jersey City, N. J.
Riverside Chem. Co., N. Tonawanda, N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rulon Laboratories, Bryant Bldg., Kansas City
Rumford Chem. Wks., Rumford, R. I.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Skotch Products Corp., 2710 Detroit Ave., Cleveland
Slick-Shine Co., 207 Astor St., Newark, N. J.
E. B. Snyder Labs., 2187 E. Harold St., Philadelphia
Solshine Mfg. Co., 44 Brookline St., Boston
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
John T. Stanley Co., 643 W. 38th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.

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Stevens Soap Corp., 200 Sullivan St., Brooklyn
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Teaco Chem. Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Thompson-Hayward Chem. Co., 2915 Southwest Blvd.,
Kansas City, Mo.
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., Box 1536, Paterson, N. J.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
United Cleanser Mfg. Co., Cambridge, Mass.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Universal Chlorinator Co., 3418 W. Pico Blvd., Los Angeles
Universal Chem. Corp., Akron, O.
James Varley & Sons, 1200 Switzer Ave., St. Louis
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Warwick Chemical Co., West Warwick, R. I.
Welch, Holme & Clark Co., 439 West St., N. Y.
G. H. Wood & Co., Toronto, Canada
Wyandotte Chem. Corp., Wyandotte, Mich.
York Chemical Co., 23 Dean St., Bklyn.

CLEANING FLUIDS (Spotting Fluids)

Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Armour & Co., 1355 W. 31st St., Chicago
Atlantic Refining Co., 260 South Broad St., Phila.
Bauma Castorine Co., 200 Mathew St., Rome, N. Y.
Bri-Test Prods. Corp., 845 E. 138th St., N. Y.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chem. Co., 62 William St., N. Y.
Cole Labs., 22-19 37th Ave., L. I. City, N. Y.
Curran Corp., Lawrence, Mass.
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield,
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Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Higley Chem. Co., Dubuque, Iowa
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
James Huggins & Son, Malden, Mass.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave.,
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Koppers Co., White Tar Div., Kearny, N. J.
La Maison Prods. Inc., 80 York St., Brooklyn, N. Y.
Manhattan Kreole Prods., 172 S. 10th St., Brooklyn
McKesson & Robbins, Bridgeport, Conn.
Merck & Co., Rahway, N. J.
Midway Chemical Co., 5235 W. 65th St., Chicago
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Pennsylvania Refining Co., Butler, Pa.
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Slick-Shine Co., 207 Astor St., Newark, N. J.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
R. R. Street & Co., 561 W. Monroe St., Chicago
Teaco Chem. Co., P. O. Box 4748, Atlanta
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
Transmotive Laboratories, 2550 S. Michigan Ave.,
Chicago
Trio Chem. Wks., 341 Scholes St., Bklyn.
Trojan Prods. & Mfg. Co., 3107 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Wileco Co., 6800 McKinley Ave., Chicago

Windsor Wax Co., 611 Newark St., Hoboken, N. J.
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Spencer Kellogg & Sons, Buffalo, N. Y.
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(see also Brokers and Dealers)

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John H. Calo, 19 Rector St., N. Y. 6
Capital City Products Co., Columbus, O.
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E. F. Drew & Co., Weccoline Div., Boonton, N. J.
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Dyestuffs & Chemicals, Inc., 11th & Monroe Sts., St.
Louis
Fezandie & Sperrle, 205 Fulton St., N. Y.
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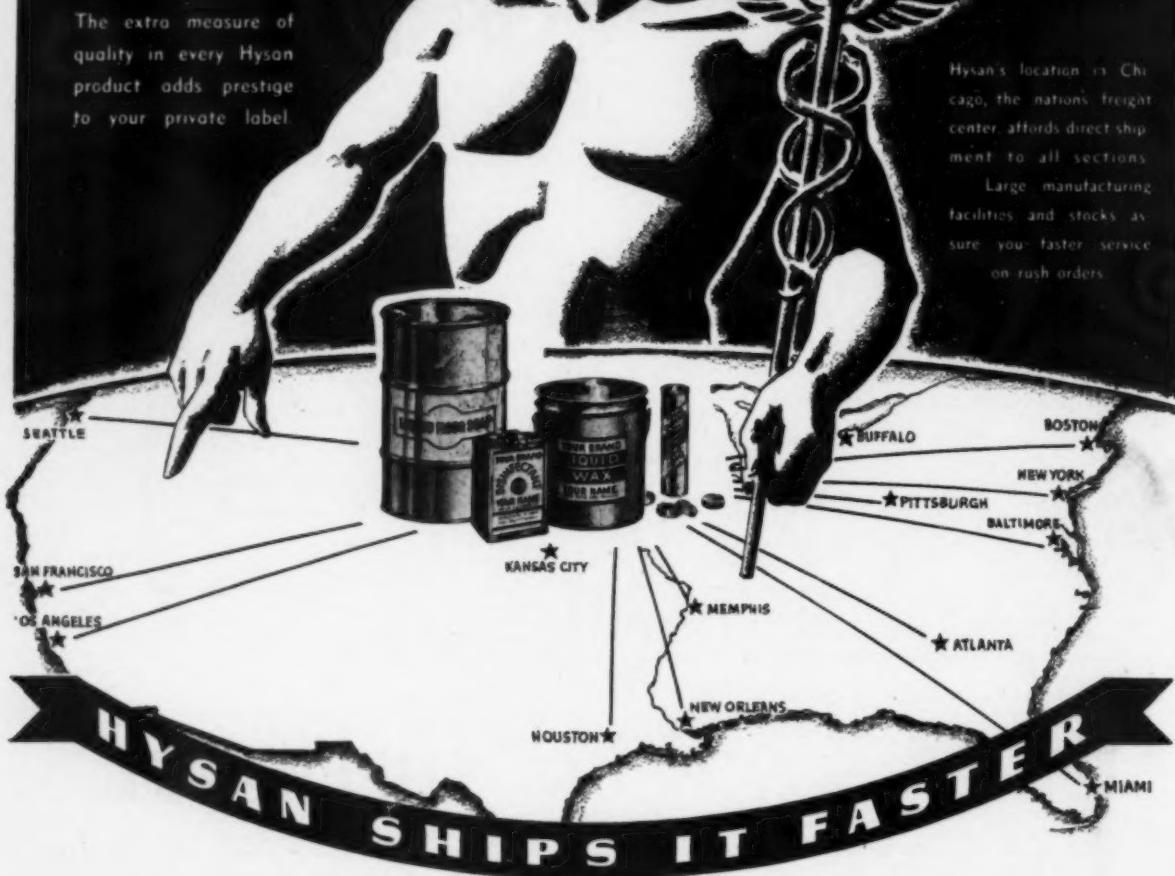
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Carlstadt Chem. Co., Carlstadt, N. J.
Chem. Mfg. & Dist. Co., Easton, Pa.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fine Organics, Inc., 211 E. 19th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City,
Mo.
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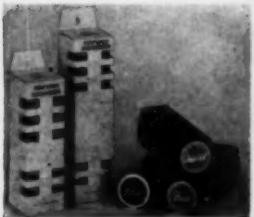
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Koppers Co., Koppers Bldg., Pittsburgh, Pa.
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Mackenzie Laboratories, Front & Yarnall Sts., Chester,
Pennsylvania
Maywood Chemical Works, Maywood, N. J.
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Miranol Chemical Co., Milltown, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Nopco Chemical Co., Harrison, N. J.
Oil States Pet. Co., 233 Broadway, N. Y.
Oronite Chemical Co., 200 Bush St., San Francisco
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Penna. Salt Mfg. Co., Widener Bldg., Phila.
Rex-Cleanwall Corp., Brazil, Ind.
Richardson Sales Corp., Jersey City, N. J.
Sandoz Chem. Wks., 61 Van Dam St., N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Sharples Chemicals, Inc., 123 S. Broad St., Phila.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
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L. Sonneborn Sons, 88 Lexington Ave., N. Y.
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Angeles
Van Dyk & Co., Belleville, N. J.
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Welch, Holme & Clark Co., 439 West St., N. Y.

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MacKenzie Laboratories, Front & Yarnall Sts., Chester,
Pa.
Mathieson Chemical Co., 60 E. 42nd St., N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St.,
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Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco, Calif.
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Mathieson Chemical Corp., 60 E. 42nd St., N. Y.
McLaughlin Gormley King Co., Minneapolis, Minn.
Midland Labs, Dubuque, Iowa
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
North Coast Soap & Chem. Works, Seattle, Wash.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Puritan Chem. Co., Atlanta, Ga.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Sanitary Prods. Co., 874 Seward St., Rochester, N. Y.
Rulon Laboratories, Bryant Bldg., Kansas City
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Sherwin-Williams Co., 601 Canal Rd., Cleveland
Thompson-Hayward Chemical Co., Kansas City, Mo.
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Universal Chlorinator Co., 3418 W. Pico Blvd., Los Angeles
Victory Chem. Co., 148 Fairmount Ave., Phila.
James Varley & Sons, 1200 Switzer Ave., St. Louis
G. H. Wood & Co., Toronto, Ont., Canada

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Baird & McGuire, Inc., Holbrook, Mass.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Supply Co., Plymouth Bldg., Cleveland
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fine Organics, Inc., 211 E. 19th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City, Mo.
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
Lynwood Co., 6115 S. Kedzie, Chicago
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Retardex Co., 1 Hanson Pl., Brooklyn
Rochester Germicide Co., Rochester, N. Y.
Rohm & Haas Co., 222 W. Washington Sq., Philadelphia
Theo. Ross Associates, 835 W. Olympic Blvd., Los Angeles
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Tech Soap Mfg. Co., 125 W. 46th Pl., Chicago
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
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Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 138th St., N. Y.
Buckingham Wax Co., Van Dam St. & Borden Ave., L. I. City, N. Y.
Samuel Cabot, Inc., 141 Milk St., Boston
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co., Baltimore, Md.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Corn King Co., Cedar Rapids, Ia.
Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
Creco Co., Inc., Creco Bldg., Long Island City, N. Y.
Crosby Chemicals, Inc., De Ridder, La.
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Co., 323 W. 16th St., N. Y.
Emulsol Corp., 59 E. Madison St., Chicago
Fergusson Laboratories, Drexel Bldg., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaskill Prods., 9 S. Letitia St., Phila.
Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City, Mo.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th and Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Klix Chem. Co., 2460 Third St., San Francisco
Koppers Co., White Tar Div., Kearny, N. J.
Manhattan Kreole Prods., 172 N. 10th St., Brooklyn
Merck & Co., Rahway, N. J.
Midland Labs., Dubuque, Iowa
National Sawdust Co., 69 N. 6th St., Bklyn.
Nopeco Chemical Co., Harrison, N. J.
N. Y. Soap Co., 258 Third St., Brooklyn
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Puritan Chem. Co., Atlanta, Ga.
Riverside Chem. Co., N. Tonawanda, N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solshine Mfg. Co., 412-2nd St., Fall River, Mass.
L. Sonnenborn Sons, 88 Lexington Ave., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tech. Soap Mfg. Co., 125 W. 46th Pl., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Wks., 3 Winter St., Worcester, Mass. (Pine Oil only)
Trio Chem. Wks., 34 Scholes St., Bklyn.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
James Varley & Sons, 1200 Switzer Ave., St. Louis
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G. H. Wood & Co., Toronto, Canada
York Chemical Co., 23 Dean St., Bklyn.

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Baird & McGuire, Inc., Holbrook, Mass.
Carlstadt Chem. Co., Carlstadt, N. J.

DISINFECTANTS, SYNTHETIC (Contd.)

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Chemical Supply Co., Plymouth Bldg., Cleveland
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Fuld Bros., 702 S. Wolfe St., Baltimore
Fine Organics, Inc., 211 1 19th St., N. Y.
Higley Chem. Co., Dubuque, Ia.
R. M. Hollingshead Corp., Camden, N. J.
Hysan Products Co., 932 W. 38th Place, Chicago.
Koppers Co., White Tar Div., Kearny, N. J.
Lynwood & Co., 6115 S. Kedzie, Chicago, Ill.
Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Peck's Prods. Co., 610 E. Clarence St., St. Louis
Puritan Chem. Co., Atlanta, Ga.
Rohm & Haas Co., 222 W. Washington Sq., Phila. 5
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
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Uncle Sam Chem. Co., 575 W. 131st St., New York
James Varley & Sons, 1200 Switzer Ave., St. Louis
G. H. Wood & Co., Toronto, Canada

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Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
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Hammond Paint & Chem. Co., Beacon, N. Y.
Hysan Products Co., 932 W. 38th Place, Chicago.
Imperial Prods. Co., 1600 Fontain St., Phila.
Midway Chemical Co., 5235 W. 65th St., Chicago
Sparhawk Co., Sparkill, N. Y.
Tobacco By-Products & Chem. Corp., Louisville, Ky.
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Whitmire Res. Labs., 339 S. Vandeventer, St. Louis

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Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19—37th Ave., L. I. City, N. Y.
Creco Co., Inc., Creco Bldg., Long Island City, N. Y.
Delta Chemical Co., 4 Payson Ave., N. Y.
Elkay Products Co., 323 W. 16th St., N. Y.
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Hercules Chem. Co., 332 Canal St., New York
Higley Chemical Co., Dubuque, Ia.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hull Co., 305 Washington St., Brooklyn
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.

Industrial Labs., 17-19 W. Conway St., Baltimore
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave.,
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Mechling Bros. Chemical Co., Line St. & Cooper's Creek,
Camden
Midland Labs., Dubuque, Iowa
North Coast Chem. & Soap Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wisc.
Per-Mo Products Co., 3604 Woodland Ave., Kansas City,
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Rex-Cleanwall Corp., Brazil, Ind.
Theo. B. Robertson Prods. Co., 700 W. Division St.,
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Rochester Germicide Co., Rochester, N. Y.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
J. A. Tumbler Lab., 423 Hanover St., Baltimore
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago

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Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Products Co., 932 W. 38th Place, Chicago.
Rochester Germicide Co., 16 Downing Pl., Rochester.
Geo. B. Robbins Dis. Co., 42 Charlton St., Boston
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Madison Ave., N. Y.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Dixie Co., 235 River Dr., Garfield, N. J.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del & Penn Sts., Camden, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
Haag Laboratories, Inc., 140th and Seeley Ave., Blue
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Harley Soap Co., Pierce and Orthodox Sts., Phila.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Prods. Co., 932 W. 38th Place, Chicago
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
Los Angeles Soap Co., 617 E. 1st St., Los Angeles
Midland Chem. Labs., Dubuque, Ia.
Nopco Chemical Co., Harrison, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
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J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultia Chem. Wks., Inc., 2 Wood St., Paterson, N. J.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., Cincinnati, O.
G. H. Wood & Co., Toronto, Ont., Canada

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Dust Filter Co., 160 N. La Salle St., Chicago
Federal Classifier Systems, Inc., 127 N. Dearborn St.,
Chicago
Lamson Corporation, Syracuse, New York
Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
Owens-Corning-Fiberglas Corp., Toledo, Ohio
Pangborn Corp., 10 Pangborn Blvd., Hagerstown, Md.
Pulverizing Machine Company, Summit, New Jersey
Sprayer Corp. of America, 5100 N. Ravenswood Ave.,
Chicago
W. W. Sly Mfg. Company, Cleveland, Ohio
Torit Mfg. Co., 8301 S. Vernon Ave., Chicago
Western Precipitation Corp., Los Angeles, California

DUST PANS

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F. H. Lawson Co., Cincinnati
National Can Corp., 110 E. 42nd St., N. Y.
Palmer Fixture Co., Waukesha, Wisc.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
White Mop Wringer Co., Fultonville, N. Y.

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Hoag Duster Co., 200 Church St., N. Y.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
Rubon Woodfinishing & Prods. Co., 500 W. 7th St.,
Kansas City, Mo.
P. R. Schuman Duster Co., 65 E. 53rd St., Brooklyn
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Iodine Value (Wijs).....	105
Color.....	5 FAC

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Titer.....	30°C.
Neutralization Value.....	199
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Color.....	5 FAC

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Iodine Value (Wijs).....	135
Color.....	5 FAC

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Neutralization Value.....	254
Iodine Value (Wijs).....	12
Color.....	1 FAC

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Neutralization Value.....	197
Iodine Value (Wijs).....	60
Color.....	5 FAC

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Neutralization Value.....	198
Iodine Value (Wijs).....	120
Color.....	8 FAC

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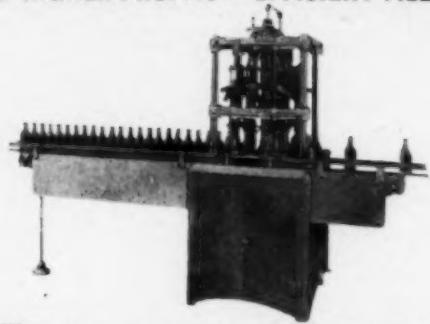
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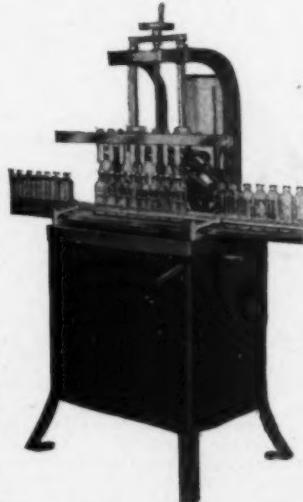


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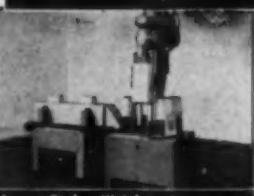
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Pneumatic Scale Corp., North Quincy, Mass.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Salkover Metal Processing, Dixie Terminal Bldg., Cincinnati
Scientific Filter Co., 12 Franklin Sq., N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Machine Co., 5918 Tabor Rd., Philadelphia
U. S. Bottlers Machinery Co., 4025 N. Rockwell St., Chicago
The Vol-U-Meter Co., 707 Ohio St., Buffalo, N. Y.
Weigh Right Automatic Scale Co., Joliet, Ill.

FILLING MACHINERY (for Liquids in drums, carboys, large cans, etc.)

Allied Steel & Equipment Co., 1007 Springfield Ave., Irvington, N. J.
Alnop Engineering Corp., 103 Green St., Milldale, Conn.
S. F. Bowser & Co., Ft. Wayne, Ind.
Clevon Products Co., 27-31 Mechanic St., Buffalo
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Filter Paper Co., 2464 N. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
M. R. M. Co., 191 Berry St., Bklyn.
Mandel Products, 207 Astor St., Newark, N. J.
National Acme Co., E. 131st St. & Coit Ave., Cleveland
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Packer Machinery Corp., 30 Irving Pl., N. Y.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)

FILLING MACHINERY (for Pastes, Cans)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Clevon Products Co., 27-31 Mechanic St., Buffalo
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)

J. L. Ferguson Co., Joliet, Ill.
Filler Machine Co., 1250 E. Montgomery St., Phila.
Filter Paper Co., 2464 N. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)

Pfaudler Co., Rochester, N. Y.
Progressive Eng. Co., Torresdale, Pa.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Scientific Filter Co., 12 Franklin Sq., N. Y.
C. T. Small Mfg. Co., 1204 Ferguson Ave., St. Louis, Mo.
Sprague-Sells Corp., 308 W. Washington St., Chicago
Stein Equipment Co., 90 West St., N. Y. (Used)
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
F. J. Stokes Machine Co., 5918 Tabor Rd., Philadelphia
Triangle Package Machy. Co., 910 N. Spaulding Ave., Chicago
U. S. Bottlers Machy. Co., 4015 N. Rockwell St., Chicago
Vol-U-Meter Co., 707 Ohio St., Buffalo, N. Y.
Weigh Right Automatic Scale Co., Joliet, Ill.

FILLING MACHINERY (for Paste, Drums)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Stokes & Smith Co., 4915 Summerdale Ave., Phila.

FILLING MACHINERY (for Pastes, Tubes)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Clevon Products Co., 27-31 Mechanic St., Buffalo
Arthur Colton Co., Detroit, Mich.
Consolidated Prod. Co., 15 Park Row, N. Y. (Used)
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)

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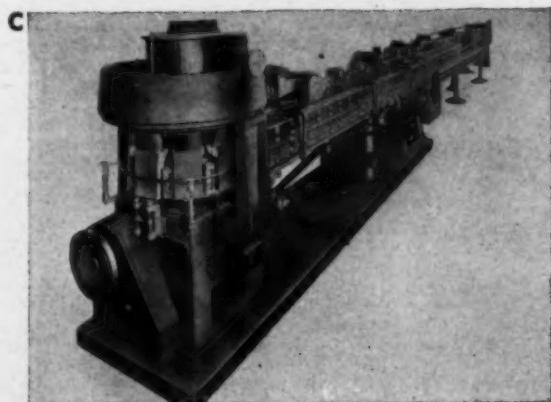
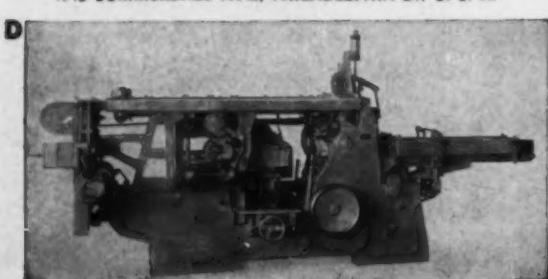


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Chicago (Used)
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Stein Equipment Co., 90 West St., N. Y. (Used)
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Consolidated Prod. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 157 Hudson St., N. Y. (Used)
B. F. Gump Co., 412 S Clinton St., Chicago
S. Howes Co., Silver Creek, N. Y. (Bbls.)
Johnson Automatic Sealer Co., Battle Creek, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
A. H. Ross & Co., Ludlow, Ky.
Stein Equipment Co., 90 West St., N. Y. (Used)
Sprout, Waldron & Co., Muncy, Pa.
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Stokes & Smith Co., 4915 Summerdale Ave., Phila.
Triangle Package Machinery Co., 906 N. Spaulding Ave., Chicago
U. S. Automatic Box Machy. Co., Roslindale, Boston, 31 Mass.
Weigh Right Automatic Scale Co., Joliet, Ill.

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Atlantic Refining Co., 260 Broad St., Phila.
Attapulgus Clay Co., 210 W. Washington Sq., Phila.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., New York
Dicalite Co., 120 Wall St., New York
Filter Paper Co., 2464 S. Michigan Ave., Chicago
Filtrol Corp., 315 W. 5th St., Los Angeles
Industrial Chem. Sales Div., West Va. Pulp and Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Johns-Manville Corp., 22 East 40th St., New York
Peerless Clay & Mineral Co., Pueblo, Colo.
Satisfaction Supply Co., 508 W. Bdway., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Witco Chemical Co., 295 Madison Ave., N. Y.

FILTER CLAYS (see Clays)

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Abbott Associates, 417 Park Sq. Bldg., Boston
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Cleveland Wire Cloth & Mfg. Co., 3574 E. 78th St., Cleveland
Filter Paper Co., 2464 N. Michigan Ave., Chicago
B. F. Gump Co., 431 S. Clinton St., Chicago
Wm. E. Hooper & Sons, Juniper & Cherry Sts., Philadelphia
Hornney & Co., 420 Lexington Ave., N. Y.
Independent Filter Press Co., 189 Seventh St., Brooklyn
National Filter Cloth & Weaving Co., 220 E. 42nd St., N. Y.
Newark Wire Cloth Co., 223 Verona Ave., Newark, N. J.
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
J. T. Perkins Co., 669 Kent Ave., Brooklyn
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Satisfaction Supply Co., 508 W. Broadway, N. Y.
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.

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Alsop Engineering Corp., 103 Green St., Milldale, Conn.
H. Reeve Angel & Co., 7 Spruce St., N. Y.

Filter Paper Co., 2464 S. Michigan Ave., Chicago
General Chemical Co., 40 Rector St., N. Y.
August Giese & Son, 121 E. 24th St., N. Y.
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., Cincinnati, O.
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Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
Independent Filter Press Co., 189 Seventh St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
Patterson Foundry & Machine Co., East Liverpool, Ohio
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.
Sparkler Mfg. Co., 201 Lake St., Mundelein, Ill.
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Stein Equipment Co., 90 West St., N. Y. (Used)
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Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Cuno Engineering Co., Meriden, Conn.
Ertel Engineering Corp., Kingston, N. Y.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Foster Pump Wks., Inc., 54 Washington St., Brooklyn
Jacob House & Sons, 52 St. Paul St., Buffalo
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Lancaster Iron Works, Lancaster, Pa.
Mixing Equipment Co., 1067 Garson Ave., Rochester
Newman Tallow & Soap Machy. Co., 1051 W. 35 St., Chicago (Used)
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
Permutit Co., 330 W. 42nd St., N. Y.
Pfahler Cleland Co., Galion, O.
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.
Sparkler Mfg. Co., 201 Lake St., Mundelein, Ill.
Stein Equipment Co., 90 West St., N. Y. (Used)
U. S. Bottlers Machy. Co., 4015 N. Rockwell St., Chicago
Whiting Corp., Harvey, Ill.

FIRE EXTINGUISHER FLUID

Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Cole Laboratories, 23rd St. & 7th Av., L. I. City
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Fuld Bros., 702 S. Wolfe St., Baltimore
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
James Good Co., Susquehanna Ave. & Martha St., Phila.
Imperial Prods. Co., 1600 Fontain St., Phila.
Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Prior Chem. Corp., 420 Lexington Ave., N. Y.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Uncle Sam Chem. Co., 575 W. 131st St., New York
Westvaco Chlorine Prod. Corp., 495 Lexington Ave., N. Y.

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Alrose Chem. Co., Box 1294, Providence, R. I.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Croton Chem. Corp., 114 Liberty St., N. Y.
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applied with a lambs' wool applicator. Other uses—handball courts, squash racket courts, badminton courts and other floor surfaces for athletic activities.

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Especially recommended as a sealer type material for use where subsequent coats of wax are to be applied.

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The perfect sealer for terrazzo and marble floors. Reduces cost of maintenance. Prevents penetration of dirt. Crystal clear, absolutely will not discolor tile upon application.

● TERRAZZO FINISH

Apply with mop—Dries quickly—Can be buffed to a beautiful lustre—Will not discolor or darken the terrazzo.

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Removes rubber deposits or burns without dulling, softening, or in any way affecting the original finish. It *cleans, revives, polishes and protects*. Applied by a spray or large cotton or wool mop. Will not collect dust or cause a slippery condition. Covers approximately 2400 sq. ft. per gal.

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Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave.,
Chicago
Johns Manville Co., 22 E. 40th St., N. Y.
Monsanto Chemical Co., 1724 South Second St., St.
Louis
Niacet Chemicals Corp., Niagara Falls, N. Y.
Per-Mo Products Co., 3604 Woodland Ave., Kansas
City, Mo.
Price Fire & Water Proofing Co., Poughkeepsie, N. Y.
Protexol Corp., 32 Market St., Kenilworth, N. J.
Victor Chemical Works, 141 West Jackson Bldg., Chicago

FISH OILS

(see also Brokers and Dealers)

Atlantic Products Corp., Commercial Trust Bldg., Phila
Atlas Refinery, Lockwood St., Newark, N. J.
Consumers Import Co., 350 Fifth Ave., N. Y.
Falk & Co., Pittsburgh
James Good Co., Susquehanna Ave. & Martha St., Phila.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Murray Oil Products Co., 21 West St., N. Y.
Nopco Chem. Co., Harrison, N. J.
Pacific Vegetable Oil Co., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie Co., 5461 W. Division St., Chicago
Swan Finch Oil Corp., 30 Rockefeller Plaza, N. Y.
Arthur C. Trask Co., 4108 S. La. Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.

FISH OIL SOAPS

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James Good, Inc., 2116 E. Susquehanna Ave., Phila.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Hoekwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Nopco Chem. Co., Harrison, N. J.
Newell Gutradt Co., 350 Fremont St., San Francisco
North Coast Chem. & Soap Works, Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St.,
Chicago
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St.,
St. Louis
Silmo Chemical Co., Vineland, N. J.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Thompson-Hayward Chem. Co., Kansas City, Mo.
Welch, Holme & Clark Co., 439 West St., N. Y.

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Armour & Co., 1355 W. 31st St., Chicago
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Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
J. Eavenson & Sons, Camden, N. J.
Haskins Bros. & Co., Omaha
Hewitt Soap Co., Dayton, Ohio
Iowa Soap Co., Burlington, Iowa
Lightfoot Schultz Co., 663 Fifth Ave., N. Y.
Procter & Gamble Co., Cincinnati
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

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Buckingham Wax Co., 51-03 Van Dam St., L. I. City,
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 Chemical Supply Co., Plymouth Bldg., Cleveland
 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
 Churchill Mfg. Co., Galesburg, Ill.
 Clifton Chemical Co., 62 William St., N. Y.
 Davies-Young Soap Co., Dayton, O.
 Delta Chem. Co., 4 Payson Ave., N. Y.
 Eagle Soap Corp., Huntington, Ind.
 Empire Chemical Prods. Co., 10 Longworth St., Newark,
 Federal Varnish Division, S. Ashland Ave. at 29th St.,
 Chicago
 Franklin Research Co., 5134 Lancaster Ave., Phila.
 Fuld Bros., 702 S. Wolfe St., Baltimore
 P. D. George Co., 5200 N. 2nd St., St. Louis
 Higley Chemical Co., Dubuque, Iowa
 Hockwald Chemical Co., 135 Mississippi St.,
 San Francisco
 Hysan Prods. Co., 932 W. 38th Place, Chicago.
 J. F. Kerns Chem. Prods., 2239 S. Michigan Ave.,
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 La Maison Prods., Inc., 80 York St., Brooklyn
 Lewis Soap & Chem. Co., Oakland, Calif.
 Midland Labs., Dubuque, Iowa
 Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
 Peck's Products Co., 610 E. Clarence Ave., St. Louis
 Rex-Cleanwall Corp., Brazil, Ind.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Shawmut Specialty Co., 313 Centre St., Boston
 Solshine Mfg. Co., 412-2nd St., Fall River, Mass.
 L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
 S. S. Stafford, Inc., 603 Washington St., N. Y.
 Standard Oil Co. (Calif.), 225 Bush St., San Francisco
 Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
 J. A. Tumbler Lab., 428 Hanover St., Baltimore
 Twin City Shellac Co., 340 Flushing Ave., Brooklyn
 Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
 U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
 Victory Chem. Co., 148 Fairmount Ave., Phila.
 T. F. Washburn Co., 2244 Elston Ave., Chicago
 Windsor Wax Co., 611 Newark St., Hoboken, N. J.
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 Amer. Floor Surfacing Mach. Co., Toledo, O.
 Atlas Floor Surfacing Mach. Corp., 248 E. 34th St.,
 N. Y.
 Electric Suravit Co., Sheboygan, Wis.
 Fay Co., 279 Fifth Ave., N. Y.
 Finnell System, Inc., Elkhart, Ind.
 General Floorecraft Corp., 338 Sixth Ave., N. Y.
 Hild Floor Machine Co., 1313 W. Randolph St., Chicago
 Hockwald Chem. Co., 135 Mississippi St., San Francisco
 Kent Co., Rome, N. Y.
 S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
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 220 W. Grand Ave., Chicago
 Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
 Ponsell Floor Machine Co., 220 W. 19th St., N. Y.
 Rex-Cleanwall Corp., Brazil, Ind.
 G. H. Wood & Co., Toronto, Ont., Canada

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 N. Y.
 Churchill Mfg. Co., Galesburg, Ill.
 A. F. Dormeyer Mfg. Co., 4316 N. Kilpat'k St., Chicago
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TODAY . . . 1948, WINDSOR OFFERS YOU 25 years of experience and specialization in floor waxes and wax research, backed by shipments of millions of pounds, millions of gallons of wax products in all sizes, to all 48 States and all 5 continents. This experience and specialized knowledge are yours when you buy from Windsor. You deal with a "Wax House" exclusively in Windsor, applying every phase of vital wax know-how to your needs.

WINDSOR MANUFACTURES: Water Emulsion Waxes, liquid and paste . . . Solvent Waxes, liquid and paste . . . Pigment Waxes, 6 colors, liquid and paste . . . Hot Process . . . Stain Waxes . . . Powdered Dance Wax . . . Polishes. Windsor packs from pint to drum—also under Private Label. Details, quotations, samples are yours for the asking.

"**WE THANK** all our friends whose repeated orders for a quarter-century show confidence in Windsor. We pledge continuance of high quality, fair prices, prompt service, and progressive research. We look forward to making many new friends in the next quarter-century."

JACOB KAHN, President
 LOUIS KAHN, Vice-Pres.

WINDSOR WAX COMPANY, INC.

HOBOKEN • NEW JERSEY

CANDY'S SUPREME CANDY'S DELUXE CANDY'S BRIGHT BEAUTY

EVERY DAY Candy & Company researches for and creates NEW and BETTER floor waxes . . . TODAY, it's Candy's Supreme. This wax has already met with success. A step above Bright Beauty and Deluxe, its qualities of durability, safety underfoot, ease of application and water resistance are unchallenged.

Candy's Supreme really puts weight behind the sales point about saving labor versus repeated application

of a cheap wax. Put your private brand label around this product and competition just doesn't exist. Put this wax on your hardest, toughest prospect's floors and you have a sale . . . and, YOU put money in the bank whenever you handle Candy's waxes. All three meet the demands of your customers, no matter what their specifications may be.

SOLD ONLY THROUGH DISTRIBUTORS

All of Candy's products, Candy's Supreme, Candy's Deluxe and Candy's Bright Beauty are sold only through Distributors. They are packed in attractive containers under your own label . . . sold only by you . . . never direct to the consuming trade (except in Chicago to experimental accounts essential to research). All of Candy's products are competitively priced to allow you a liberal margin of profit.

EXPERIMENTAL SAMPLES ON REQUEST

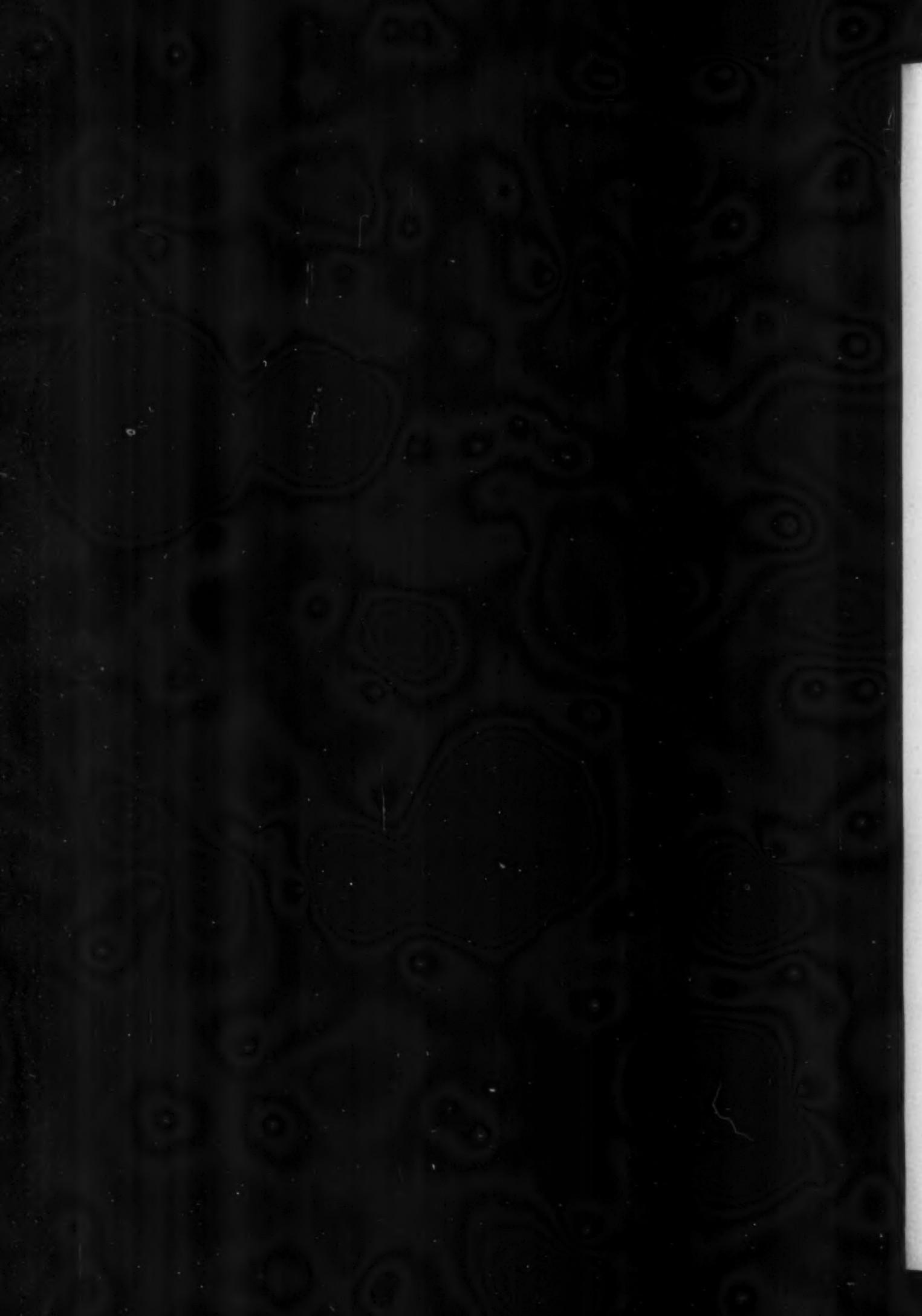
Wax Specialists for over 55 years
Candy & Company, Inc.

2515 W. 35th ST., CHICAGO

MANUFACTURERS OF PREPARED PASTE WAX, SPIRIT LIQUID PREPARED WAXES, POWDERED DANCE FLOOR WAX, CREAM FURNITURE POLISHES

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FLOOR SCRUB SOAPS (see also Potash Soaps)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 47-02-5th St., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Arrow Laboratories, 236 W. North Ave., Chicago
Banner Chem. Prods. Co., 60 Elm St., Newark, N. J.
Baum's Castorine Co., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 138th St., New York
Buckingham Wax Co., 51-03 Van Dam St., L. I. City, N. Y.
Candy & Co., 2515 W. 35th St., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts. Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Churchill Mfg. Co., Galesburg, Ill.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Empire Chem. Prods. Co., 12 Longworth Ave., Newark, N. J.
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaskill Products, 9 S. Letitia St., Phila.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th and Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sta., Philadelphia.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 932 W. 38th Place, Chicago.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Kranich Soap Co., 60 Richards St., Brooklyn
Lanair Chem. Corp., 236 W. North Ave., Chicago
Lewis Soap & Chem. Co., 383 Seventh St., Oakland, Calif.
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
Los Angeles Soap Co., 617 E. 1st St., Los Angeles
M. & H. Laboratories, 2705 Archer Ave., Chicago
Midland Labs., Dubuque, Iowa
Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
Mutual Chem. & Supply Co., 257 W. Gay St., Columbus, Ohio
Nopeo Chem. Co., Harrison, N. J.
N. Y. Soap Co., 258 Third St., Brooklyn
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., Atlanta, Ga.
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Rex-Cleanwall Corp., Brazil, Ind.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solshine Mfg. Co., 412-2nd St., Fall River, Mass.
S. S. Stafford, Inc., 603 Washington St., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago
Tech. Soap Mfg. Co., 125 W. 46th Pl., Chicago
Texol Chemical Works, 3 Winter St., Worcester, Mass.
Thompson-Hayward Chem. Co., Kansas City, Mo.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Twi-Laq Chemical Co., 25 N. Portland Ave., Bklyn.
Ultra Chem. Wks., Box 1536, Paterson, N. J.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
James Varley & Sons, 1200 Switzer Ave., St. Louis
Victory Soap & Chem. Co., 252 Third St., Bklyn.
T. F. Washburn Co., 2244 Elston Ave., Chicago

Windsor Wax Co., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Ont., Canada

FLOOR WAXES

American Wax Co., 13-26 128th St., College Point, L. I.
Ampion Corp., 47-02-5th St., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Banner Chemical Products Co., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 138th St., New York
Buckingham Wax Corp., Van Dam St., & Borden Ave., L. I. City, N. Y.
Candy & Co. 2515 W. 35th St., Chicago
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Service Co., Baltimore
Chemical Mfg. Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., 4 Payson Ave., N. Y.
Dri-Brite, Inc., 4443 Cook Ave., St. Louis
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
Economics Laboratory, St. Paul
Empire Chemical Prods. Co., 10 Longworth St., Newark, N. J.
Federal Varnish Division, S. Ashland Ave. at 29th St., Chicago
Fox Lake Wax Co., Fox Lake, Ill.
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sta., Phila.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 932 W. 38th Place, Chicago.
Jones Products, 167 Second St., Cambridge, Mass.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
H. Krevit & Co., 11 Albert St., New Haven, Conn.
La Maison Prods., Inc., 80 York St., Brooklyn
Lewis Soap & Chem. Co., 383 Seventh St., Oakland, Calif.
Manhattan Kreole Prods., 172 N. 10th St., Brooklyn
Midland Labs., Dubuque, Iowa
M. & H. Laboratories, 2703 Archer Ave., Chicago
Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
Mutual Chem. & Supply Co., 257 W. Gay St., Columbus, Ohio
Oil Specialties & Refining Co., 18 Bridge St., Bklyn.
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Peck's Prods., 610 E. Clarence Ave., St. Louis
Perrow Chemical Co., Hurt, Va.
Puritan Chem. Co., Atlanta, Ga.
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Rex-Cleanwall Corp., Brazil, Ind.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Shawmut Specialty Co., 313 Centre St., Boston
Slick-Shine Co., 207 Astor St., Newark, N. J.
Solshine Mfg. Co., 412-2nd St., Fall River, Mass.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
H. F. Staples Co., Medford, Mass.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Texas Soap Mfg. Corp., 3905 Calhoun Rd., Houston
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Twi-Laq Chemical Co., 25 N. Portland Ave., Brooklyn

FLOOR WAXES (Contd.)

Twin City Shellac Co., 340 Flushing Ave., Brooklyn
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Specialties Corp., 435 Western Ave.,
Chicago
Universal Chem. Corp., Akron, O.
Victory Chem. Co., 148 Fairmount Ave., Phila.
Victory Soap & Chem. Co., 252 Third St., Bklyn.
T. F. Washburn Co., 2244 Elston Ave., Chicago
Wilco Co., 6800 McKinley Ave., Los Angeles
Windsor Wax Co., Inc., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Canada

FLOTATION OILS

Antara Prods. Div., Gen. Aniline & Film Corp., 444
Madison Ave., N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Atlantic Refining Co., 260 S. Broad St., Phila.
Barrett Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Cliffs Dow Chemical Co., Marquette, Mich.
Crosby Chemicals, Inc., DeRidder, La.
Darling & Co., 4201 S. Ashland Ave., Chicago
Disco Co., Oliver Bldg., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington, Del.
Emery Industries, 4300 Carew Tower, Cincinnati
Glidden Co., Southern Pine Chem. Co. Div., Jacksonville,
Fla.
A. Gross & Co., 295 Madison Ave., N. Y.
Hardwood Chemical Co., 2 Jersey St., Buffalo, N. Y.
Hercules Powder Co., Wilmington
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Republic Chemical Co., 94 Beekman St., N. Y.
Sherwood Refining Co., Englewood, N. J.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y. C.
Tennessee Eastman Corp., Kingsport, Tenn.
Union Bag & Paper Corp., 233 Bdway., N. Y.
Wohurn Chemical Corp., Harrison, N. J.

FLUORIDES

(see also Dealers)

American Co. of America, Gulf Bldg., Pittsburgh
American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N. Y.
American Fluoride Corp., 151 W. 19th St., N. Y.
Blockson Chemical Co., Joliet, Ill.
Croton Chem. Corp., 114 Liberty St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Foote Mineral Co., 1609 Summer St., Philadelphia
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lindsay Light & Chem. Co., West Chicago, Ill.
Merck & Co., Rahway, N. J.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pfaltz & Bauer, 350 Fifth Ave., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Henry Sundheimer, Inc., 103 Park Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

FLYPAPER and RIBBONS

Russell Sales & Mfg. Co., 15 Park Row, N. Y.
Tanglefoot Co., Grand Rapids, Mich.
R. E. Tongue & Bro., Alleghany and Amber Sts., Phila.

FLY SPRAYS (see Household Insecticide Sprays)

FOAMING AGENTS (see Saponin; also Detergents, Synthetic; also Wetting Agents)

FOOT BATHS (Rubber)

U. S. Rubber Co., Market & South Sts., Passaic, N. J.

FORMALDEHYDE

(see also Brokers and Dealers)

American-British Chemical Supplies, 180 Madison Ave.,
N. Y.
American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N. Y.
Cliffs-Dow Chem. Co., Marquette, Mich.
Delta Chem. & Iron Co., Wells, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Wm. S. Gray Co., 342 Madison Ave., N. Y.
Hercules Powder Co., Wilmington, Del.
Heyden Chem. Co., 398 7th Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Work, St. Louis, Mo.
Merck & Co., Rahway, N. J.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

FORMALDEHYDE CANDLES

Bauer & Black, Chicago
Cenol Co., 4250 N. Pulaski Ave., Chicago
Depree Chem. Co., Holland, Mich.

FRAMES (Soap)

Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 49th St., Brooklyn
Littleford Bros., 451 E. Pearl St., Cincinnati
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago
Stein Equipment Co., 90 West St., N. Y. (Used)

FREON—(Dichloro-difluoro-methane)

Kinetic Chemicals, Inc., Wilmington 98, Del.

FULLERS EARTH

American Colloid Co., 363 W. Superior St., Chicago
30 Rockefeller Plaza, N. Y.
American Cyanamid & Chem. Corp.,
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Attapulgus Clay Co., 210 W. Washington Sq., Phila.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
Filtral Corp., 634 S. Spring St., Los Angeles
Floridin Co., 200 Liberty St., Warren, Pa.
Fullers Earth Co., 2049 E. 100th St., Cleveland
Hammill & Gillespie, 225 Broadway, N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Jas. H. Rhodes & Co., 157 W. Hubbard St., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
A. E. Starkie Co., 5461 W. Division St., Chicago
Tamma Silica Co., 228 N. La Salle St., Chicago
United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Welch, Holme & Clark Co., 439 West St., N. Y.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.

FUMIGANTS (Cyanides, Chloropicrin, Methyl Bromide, etc.)

American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.

FUMIGANTS (Contd.)

Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
Mechling Bros. Chemical Co., Camden, N. J.
Michigan Chem. Corp., St. Louis, Mich.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
Rohm & Haas Co., Inc., 222 W. Washington Sq.,
Philadelphia
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

GAS MASKS

Davis Emergency Equip. Co., 43 Halleck St., Newark,
New Jersey
Mine Safety Appliances Co., Braddock, Thomas & Meade
Sts., Pittsburgh, Pa.

GAUGES (see Instruments)

GERANIOL (see Aromatic Chemicals)

GERANIUM OIL (see Essential Oils)

GERANYL ACETATE (see Aromatic Chemicals)

GLASS BOTTLES and JARS (see Bottles)

GLASS and WINDSHIELD CLEANERS

Albert Albek, Inc., 515 S. Fairfax, Los Angeles
Ampion Corp., 47-02—5th St., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Baird & McGuire, Inc., Holbrook, Mass.
Barton Chem. Co., 3907 S. Langley Ave., Chicago
Buck-Jack Co., 3056 Federal St., Baltimore
Chemical Mfg. & Dist. Co., Easton, Pa.
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Labs., 22-19—37th Ave., Long Island City.
Delta Chem. Co., 4 Payson Ave., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
Industrial Labs., 17-19 W. Conway St., Baltimore
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Kinner Prods. Co., Pataskala, Ohio
Lewis Soap & Chem. Co., Oakland, Calif.
Lorenz Chemical Co., 135 N. 32nd Ave., Omaha
Manhattan Kreole Prods., 172 N. 10th St., Brooklyn
M. Michel & Co., 90 Broad St., N. Y.
Midland Labs., Dubuque, Ia.
M. & H. Laboratories, 2703-5 Archer Ave., Chicago
Nopco Chem. Co., Harrison, N. J.
Puritan Chem. Co., Atlanta
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Transmotive Labs., 2550 S. Michigan Ave., Chicago
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Universal Chlorinator Co., 3418 W. Pico Blvd., Los Angeles
Wileco Co., 6800 McKinley Ave., Los Angeles

GLUES (see Adhesives)

GLYCERINE (Refined)

Armour & Co., 1355 W. 31st St., Chicago
Century Stearic Acid Candle Wks., 41 E. 42nd St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Garrigues, Stewart & Davies, Inc., 40 Rector St., N. Y.
A. Gross & Co., 295 Madison Ave., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Lever Bros. Co., Cambridge, Mass.
Los Angeles Soap Co., Los Angeles, Calif.
Merck & Co., Rahway, N. J.
Nopco Chem. Co., Harrison, N. J.
Leo Pasternak, 110 William St., N. Y. (Brokers)
Procter & Gamble Co., Cincinnati
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
C. J. Schellings & Co., 251 Pearl St., N. Y. (Brokers)
Swift & Co., Union Stock Yards, Chicago
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wriley Co., 6801 West 65th St., Chicago

GLYCERINE PLANTS AND EQUIPMENT

E. B. Badger Co., 25 Pitts St., Boston
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 150 Broadway, N. Y.
Ernest Scott & Co., Fall River, Mass.
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

GREASES (See Tallow)

GREASES, LUBRICATING (see Petroleum Bases)

GREEN SOAP (see Potash Soap)

GRINDING MACHINERY (for milling, pulverizing, etc.)

Abbe Engineering Co., 50 Church St., N. Y.
American Pulverizer Co., 18th & Austin Sts., St. Louis
Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Gruendler Patent Crusher & Pulverizer Co.,
900 N. First St., St. Louis
B. F. Gump Co., 412 S. Clinton St., Chicago
Houchin Machy. Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Kent Machine Works, 39 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., Lyndhurst, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
Olsen & Tilgner Mfg. Co., 2276 Elston Ave., Chicago
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Pulverizing Machinery Co., Chatham Rd., Summit, N. J.
Chas. Ross & Sons, 150 Classon Ave., Brooklyn
Patterson Foundry & Machine Co., East Liverpool, Ohio
Sprout Waldron & Co., Muncey, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Sturtevant Mill Co., Harrison Sq., Boston
Williams Patent Crusher & Pulverizer Co., St. Louis

GUMS

Albert Albek, Inc., 515 S. Fairfax Ave., Los Angeles
American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N. Y.
C. W. Campbell Co., 157 Chambers St., N. Y.
Consumers Import Co., 350 Fifth Ave., N. Y.
T. G. Cooper & Co., Cedar & Venango Sts., Philadelphia
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
Dodge & Olcott, Inc., 180 Varick St., N. Y.
R. Gesell, Inc., 200 W. Houston St., N. Y.
Gillespie-Rogers-Pyatt, Ltd., 80 John St., N. Y.

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*an important record of service
to an important industry*

Our past has been steady growth and expansion in the manufacture of quality soaps and detergents. Our future is a promise—a promise of continued fine products and service to you.

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a product to meet your every need

- Pure and Clear Coco Liquid Soaps
- Vegetable Oil Soap Bases
- Liquid Scrubbing Soaps
- Special Liquid Cleaners
- Disinfectants
- Soap Powders
- Bar Soaps
- Dishwashing Compounds
- Powdered and Flake Soaps
- Synthetic Detergents

Standardized, Dependable Soaps and Detergents

We Specialize in Sales to the Jobber



Peck's PRODUCTS
COMPANY

610 E. CLARENCE AVE. ST. LOUIS 15, MO.

GUMS (Contd.)

Industrial Raw Materials Corp., 52 Wall St., N. Y.
 J. L. Hopkins & Co., 220 Broadway, N. Y.
 O. G. Innes Corp., 82 Wall St., N. Y.
 Innis, Speiden & Co., 117 Liberty St., N. Y.
 George H. Lincks, 165 John St., N. Y.
 National Starch Products, Inc., 270 Madison Ave., N. Y.
 Neuman-Buslee & Wolfe, 224 W. Huron St., Chicago
 Orbis Products Corp., 215 Pearl St., N. Y.
 S. B. Penick & Co., 50 Church St., N. Y.
 R. J. Prentiss & Co., 110 William St., N. Y.
 J. H. Redding, Inc., 17 Battery Place, N. Y.
 R. F. Revson Co., 144 W. 18th St., N. Y.
 Rohm & Haas Co., 222 W. Washington Sq., Philadelphia
 Rosenthal-Bercow Co., 25 East 26th St., N. Y.
 William H. Scheel, Inc., 88 Franklin St., Brooklyn
 Stein Hall & Co., 285 Madison Ave., N. Y.
 Thurston & Bradich, 286 Spring St., N. Y.
 Arthur C. Trask Co., 4102 S. La Salle St., Chicago
 U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.
 Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

GUMS, FUSED CONGO

Gillespie-Rogers-Pyatt, Ltd., 80 John St., N. Y.
 O. G. Innes Corp., 82 Wall St., N. Y.
 S. B. Penick & Co., 50 Church St., N. Y. C.
 U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.

GYM-FINISH FLOOR SEAL (see Floor Finishes)

HAND (Mechanic's) SOAP

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
 Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
 Antiseptol Co., 5524 Northwest Highway, Chicago
 Armour & Co., 1355 W. 31st St., Chicago
 Baums Castorine Co., 200 Mathew St., Rome, N. Y.
 Buck-Jack Co., 3056 Federal St., Baltimore
 Chem. Mfg. & Dist. Co., Easton, Pa.
 Chem. Service Co. of Balto., Howard & West Sts., Balto.
 Chemical Supply Co., Plymouth Bldg., Cleveland
 Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
 Churchill Mfg. Co., Galesburg, Ill.
 Colgate-Palmolive-Peet Co., Jersey City, N. J.
 Columbia Soap & Chem. Co., Inc.,
 324 Leavenworth St., San Francisco
 Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
 Cudahy Packing Co., 221 N. La Salle St., Chicago
 Davies Young Soap Co., Dayton, O.
 Delta Chemical Co., 4 Payson Ave., N. Y.
 Eagle Soap Corp., Huntington, Ind.
 J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
 A. C. Ferguson Co., Drexel Bldg., Phila.
 Flash Chem. Co., 160 2nd St., Cambridge, Mass.
 Fuld Bros., 702 S. Wolfe St., Baltimore
 Gaylord Chem. Co., 701 Woodsweather Rd., Kansas City, Mo.
 L. E. Hicks & Son, 507 S. Grove Ave., Oak Park, Ill.
 Higley Chem. Co., Dubuque
 Hockwald Chem. Co., 135 Mississippi St., San Francisco
 Arnold Hoffman Co., Providence, R. I.
 R. M. Hollingshead Co., Camden, N. J.
 Hubman Supply Co., 225 N. 4th St., Columbus, O.
 Hysan Prods. Co., 9332 W. 38th Place, Chicago
 Imperial Prods. Co., 1600 Fontain St., Phila.
 Insto Co., 110 Center St., Los Angeles
 J. Chemical Works, 602 W. 37th St., N. Y.
 Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
 J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
 Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
 Los Angeles Soap Co., 617 E. First St., Los Angeles
 Luxury Soap Co., 165 Augusta St., Irvington, N. J.
 Mione Mfg. Co., Collingdale, Pa.
 National Sanitary Prods. Co., 217 N. 2nd St., St. Louis
 North Coast Soap & Chem. Wks., Seattle, Wash.
 Peck's Prods. Co., 610 E. Clarence Ave., St. Louis

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Boea	Congo
Damar	East India
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HAND (Mechanic's) SOAP (Contd.)

Procter & Gamble Co., Cincinnati
Puritan Chem. Co., Atlanta, Ga.
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Skat Co., Hartford, Conn.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
United Cleanser Mfg. Co., Cambridge, Mass.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Utility Co., 636 W. 44th St., N. Y.
Vanco Co., Manchester, Conn.
Vlet Soap Co., 638 Monroe St., Brooklyn
Washine-National-Sands, Inc., 37-02 Northern Blvd., Long Island City.
G. H. Wood & Co., Toronto, Ont., Canada

HAND SOAP, Powdered

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Banner Chemical Products Co., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balt., Howard & West Sts., Balt.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Phila.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Camden, N. J.
Essential Chemicals, 3286 N. 33rd St., Milwaukee
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodward Rd., Kansas City, Mo.
L. E. Hicks & Son, 507 S. Grove Ave., Oak Park, Ill.
Kaskill Products, 9 Letitia St., Phila.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Co., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
Insto Co., 110 Center St., Los Angeles
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
La Maison Products, Inc., 80 York St., Brooklyn
M. & H. Laboratories, 2705 Archer Ave., Chicago
Mackenzie Laboratories, Front & Yarnell, Chester, Pa.
Nopco Chemical Co., Harrison, N. J.
Packwood Mfg. Co., St. Louis
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Presto Mfg. Co., Myrtle and Curfew Sts., St. Paul, Minn.
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., Atlanta
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Theo. B. Robertson Prods. Co.
700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Trio Chem. Wks., 341 Scholes St., Bklyn.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Utility Co., 636 W. 44th St., N. Y.
Warren Soap Mfg. Co., Cambridge, Mass.
G. H. Wood & Co., Toronto, Canada
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

HARD WATER SOAPS (Salt Water Soaps)

Armour Soap Wks., 1355 W. 31st St., Chicago
Baum's Castorine Co., Rome, N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
James Counts Soap Co., 2nd & Washington Aves., St. Louis
Cudahy Packing Co., 221 N. LaSalle St., Chicago
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Phila., Pa.
Haskins Bros. & Co., Omaha, Neb.
Hewitt Soap Co., Dayton, Ohio
Higley Chemical Co., Dubuque, Iowa
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Calif.
Los Angeles Soap Co., Los Angeles, Calif.
Nopco Chem. Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
North Coast Soap & Chem. Works, Seattle, Wash.
Peck's Prod. Co., 620 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Vlet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

HELIOTROPIN (See Aromatic Chemicals)

HEXAETHYL TETRAPOSPHATE

Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles, Cal.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
John Powell & Co., 1 Park Ave., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Victor Chemical Works, 141 Jackson Blvd., Chicago, Ill.

HOLDERS (Deodorizing Block)

(see also Cans, Fibre)

Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Service of Baltimore, Howard & West Sts., Baltimore
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Cin-Made Corp. (fibre), 294 Eggleston Ave., Cincinnati
Eagle Soap Corp., Huntington, Ind.
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Elkay Products Corp., 323 W. 16th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Prods. Co., 932 W. 38th Place, Chicago
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
National Sanitary Chem. Co., Baltimore, Md.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Rochester Germicide Co., 16 Downing Pl., Rochester N. Y.
Uncle Sam Chemical Co., 573 W. 131st St., St. N. Y. C.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

HOMOGENIZERS (DISPERSION EQUIPMENT)

Abbe Engineering Co., 50 Church St., N. Y.
Bowser, Inc., Fort Wayne, Ind.
Eppenbach, Inc., 45-10 Vernon Blvd., Long Island City, N. Y.
Wurster & Sanger, 5291 S. Kenwood Ave., Chicago

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Chemical Supply Co., Plymouth Bldg., Cleveland
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Cole Labs., 22-19—37th Ave., Long Island City
Corn King Co., Cedar Rapids, Ia.
Fergusson Laboratories, Drexel Bldg., Philadelphia
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Imperial Prods. Co., 1600 Fontain St., Phila.
Hysan Prods. Co., 932 W. 338th Place, Chicago
Merck & Co., Rahway, N. J.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago, Ill.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
John T. Stanley Co., Inc., 642 W. 30th St., N. Y.
Thompson Hayward Chem. Co., Des Moines, Iowa
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City

HOUSEHOLD INSECTICIDE BASE (see Petroleum Bases)

HOUSEHOLD INSECTICIDES, LIQUID

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An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Antiseptol Co., 5524 Northwest Highway, Chicago
Baird & McGuire, Inc., Holbrook, Mass.
Banner Chemical Co., 60 Elm St., Newark, N. J.
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Bauma Castorine Co., 200 Mathew St., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Brilco Labs., 947-61st St., Brooklyn
Bri-Test Prods. Corp., 845 E. 138th St., N. Y.
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co., Baltimore.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
Corn King Co., Cedar Rapids, Ia.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Delta Chemical Co., 4 Payson Ave., N. Y.
C. B. Dodge Co., Westport, Conn.
Eagle Soap Corp., Huntington, Ind.
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Elkay Products Co., 323 W. 16th St., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Gould & Olen, 140 Liberty St., N. Y.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Harrison Oil Co., 5110 N. 35th St., Milwaukee
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 93 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
Industrial Management Corp., 639 S. Spring St., Los Angeles
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco
Klix Chem. Co., 2460 Third St., San Francisco
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Ketoid Chem. Co., 339 S. Van Deventer, St. Louis

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Lewis Soap & Chem. Co., Oakland, Calif.
Lorenz Chem. Co., 135 No. 32nd Ave., Omaha
Manhattan Kreole Prods., 172 N. 10th St., Brooklyn
Maywood Pest Exterminators, Maywood, Ill.
McCormick & Co., Baltimore, Md.
M. & H. Laboratories, 2703-5 Archer Ave., Chicago
Michigan Chem. Corp., St. Louis, Mich.
Midland Labs., Dubuque, Ia.
Midway Chemical Co., 5235 W. 65th St., Chicago
Edgar A. Murray Co., 2703 Guoin St., Detroit
Mutual Chem. & Supply Co., 257 W. Gay St., Columbus, Ohio
National Sanitary Prods. Co., 217 N. 2nd St., St. Louis
John Opitz Inc., 50-14-39th St., L. I. City
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Perrow Chem. Co., Hurt, Va.
Pest Control Supply Co., 210 N. Western Ave., Los Angeles
Puritan Chem. Co., Atlanta
Rex Research Corp., Toledo
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
St. Lawrence Chem. Co., Ogdensburg, N. Y.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis, Mo.
Selig Co., 336 Marietta St., Atlanta, Ga.
Shell Oil Co., Inc., 50 W. 50th St., N. Y.
Sinclair Refining Co., East Chicago, Ind.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solashine Mfg. Co., 44 Brookline St., Cambridge, Mass.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Standard Oil Co., of Calif., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chemical Works, 3 Winter St., Worcester, Mass.
Thompson-Hayward, 2915 S. W. Blvd., Kansas City
Trio Chem. Wks., 341 Scholes St., Bklyn.
Trojan Products & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
James Varley & Sons, 1200 Switzer Ave., St. Louis
Victory Chem. Co., 148 Fairmount Ave., Philadelphia
Vliet & Co., 638 Monroe St., Brooklyn
Robert C. White Co., Chestnut Hill, Phila.
Wileco Co., 6800 McKinley Ave., Los Angeles
Whitmire Research Labs., 339 S. Vandeventer, St. Louis
G. H. Wood & Co., Toronto, Ont., Canada
York Chemical Co., 23 Dean St., Bklyn.

HOUSEHOLD INSECTICIDES PASTE, (see Phosphorus Paste, or Roach Paste)

HOUSEHOLD INSECTICIDES, POWDERED

Allaire Woodward & Co., Peoria, Ill.
Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Associated Chemists, Inc., 1906 N. Halstead, Chicago
Boston Chemical Industries, 64 E. Brookline St., Boston
Chem. Mfg. & Dist. Co., Easton, Pa.
Chemical Service Co., Baltimore 30, Del.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Cole Labs., 22-19 37th Ave., L. I. City, N. Y.
Corn King Co., Cedar Rapids, Ia.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Co., 323 W. 16th St., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.

Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
Gouiard & Olena, Inc., 140 Liberty St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Koppers Co., White Tar Div., Kearny, N. J.
Lewis Soap & Chem. Co., Oakland, Calif.
Maywood Pest Exterminators, Maywood, Ill.
McCormick & Co., Inc., Baltimore, Md.
McLaughlin Gormley King Co., 1715-5th St., S. E., Minneapolis, Minn.
Michigan Chem. Corp., St. Louis, Mich.
Midland Labs., Dubuque, Ia.
Midway Chemical Co., 5235 W. 65th St., Chicago
Edgar A. Murray Co., 2703 Guoin St., Detroit
Mutual Chem. & Supply Co., 257 W. Gay St., Columbus, Ohio
National Sanitary Prods. Co., 217 N. 2nd St., St. Louis
John Opitz, Inc., 50-14 39th St., L. I. City
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Pest Control Supply Co., 210 N. Western Ave., Los Angeles
Puritan Chemical Co., Atlanta
Ratin Labs., 116 Broad St., N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
St. Lawrence Chem. Co., Ogdensburg, N. Y.
Selig Co., 336 Marietta St., Atlanta, Ga.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Victory Chem. Co., 148 Fairmount Ave., Philadelphia
Whitmire Res. Labs., 339 S. Vandeventer, St. Louis
Wilkil Company, 1174 S. La Brea Ave., Los Angeles
G. H. Wood & Co., Toronto, Ont., Canada
York Chemical Co., 23 Dean St., Bklyn.

HYDROGENATED OILS

Armour & Co., 1355 W. 31st St., Chicago
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, 4300 Carew Tower, Cincinnati
W. C. Hardesty Co., Inc., 41 E. 42nd St., N. Y.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Spencer Kellogg & Sons, Buffalo, N. Y.
Procter & Gamble Co., Cincinnati, O.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Welch, Holme & Clark, 439 West St., N. Y.
Wesson Oil & Snowdrift Co., 21 West St., N. Y.
Wyandotte Oil Co., Wyandotte, Mich.

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Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Richards Sales Corp., Warren & Morris St., Jer. City, N. J.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Royce Chem. Co., Carlton Hill, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

HYDROCYCITRONELLAL (see Aromatic Chemicals)

- HYDROXYCITRONELLAL** (see Aromatic Chemicals)
- HYPHOCHLORITES** (see Chlorine) (see Laundry Bleach)
- INFUSORIAL EARTH** (see Abrasives)
- INSECT FLOWERS** (see Pyrethrum)
- INSECT POWDER GUNS** (see Bellows)
- INSECT REPELLENTS**

J. T. Baker Chem. Co., Phillipsburg, N. J.
 Carbide & Carbon Chems. Corp., 30 E. 42nd St., N. Y.
 Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
 Fluid Bros., Inc., 702 S. Wolfe St., Baltimore
 Kessler Chem. Co., 7272 State Rd., Phila.
 Ketoid Chem. Co., 339 S. Van Deventer, St. Louis
 Michigan Chem. Corp., St. Louis, Mich.
 Puro Co., 2801 Locust St., St. Louis
 Skol Co., 250 E. 43rd St., N. Y.
 Stanco, Inc., 216 W. 23rd St., N. Y.
 St. Lawrence Chem. Co., Ogdensburg, N. Y.
 Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
 Whitmire Res. Labs., 339 Vandeventer, St. Louis
 G. H. Wood & Co., Toronto, Ont., Canada
 U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

INSECTICIDE BASE OILS (see Petroleum—
 Insecticide Base Oils)

INSECTICIDE CONCENTRATES, Synthetic

Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
 Atlas Powder Co., Wilmington, Del.
 J. T. Baker Chem. Co., Phillipsburg, N. J.
 Chipman Chem. Co., Bound Brook, N. J.
 Dow Chemical Co., Midland, Mich.
 E. I. Du Pont de Nemours & Co., Wilmington, Del.
 Fairfield Labs., 417 Cleveland Ave., Plainfield, N. J.
 Eston Chems., Inc., 3100 E. 26th St., Los Angeles
 Geigy & Co., 89 Barclay St., N. Y.
 Julius Hyman & Co., Denver, Colo.
 Hercules Powder Co., Wilmington, Del.
 Kolker Chem. Wks., 80 Lister Ave., Newark, N. J.
 Penna. Salt Mfg. Co., Widener Bldg., Phila.
 John Powell & Co., 1 Park Ave., N. Y.
 R. J. Prentiss & Co., 110 William St., N. Y.
 Rohm & Haas, Inc., 222 W. Washington Sq., Phila.
 U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
 Velsicol Corp., 330 E. Grand Ave., Chicago
 Westvaco Chlorine Prods., 405 Lexington Ave., N. Y.
 Whitmire Research Corp., 339 E. Vandeventer, St. Louis

INSECTICIDE SPRAY PERFUMES (see also
 Perfuming Materials)

Allondon, Inc., 66 Dey St., N. Y.
 van Ameringen-Haebler, Inc., 315 4th Ave., N. Y.
 Aromatic Products, Inc., 15 E. 30th St., N. Y.
 Bush Aromatics, 136 Liberty St., N. Y.
 Centflor Co., 6 Varick St., N. Y.
 Antoine Chiris Co., Inc., 119 W. 57th St., N. Y.
 Compagnie Duval, Division of S. B. Penick & Co., 50
 Church St., N. Y.
 Compagnie Parento, Inc., Croton-on-Hudson, N. Y.
 Dodge & Olcott, Inc., 180 Varick St., N. Y.
 P. R. Dreyer Inc., 119 W. 19th St., N. Y.
 E. I. Du Pont de Nemours, Wilmington, Del.
 Felton Chemical Co., 603 Johnson Ave., Brooklyn
 Benj. French, Inc., 160 Fifth Ave., N. Y. C.
 Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
 General Drug Co., 644 Pacific St., Brooklyn, N. Y.
 Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
 Gunning & Gunning, 601 W. 26th St., N. Y.
 D. W. Hutchinson & Co., 162 Front St., N. Y.
 Geo. Lueders & Co., 427 Washington St., N. Y. C.
 Lautier Fils, Inc., 158 W. 18th St., N. Y. C.
 Magnus, Mabee & Reynard, Inc., 16 Desbrosses St., N. Y.
 Naugatuck Aromatics, 254 Fourth Ave., N. Y.
 New York Aromatics Co., 5 Beekman St., N. Y.

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INSECTICIDE SPRAY PERFUMES (Contd.)

Norda Essential Oil & Chem. Co., 601 W. 26th St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Perry Bros., Inc., 220 Flushing Ave., Brooklyn
Edw. Remus & Co., 11 W. 42nd St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Sparhawk Co., Sparkill, N. Y.
Tombarel Prods. Corp., 12 E. 22nd St., N. Y.
Van Dyk & Co., Belleville, N. J.

INSECTICIDE SPREADERS (See Clays)

INSECTICIDE TESTING (see Laboratories)

INSECTICIDES (see Household Insecticides, Agricultural Insecticides)

INSTRUMENTS, Meters, Gauges, Thermometers, Etc.

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland
Bausch & Lomb Optical Co., Rochester, N. Y.
S. F. Bowser & Co., Ft. Wayne, Ind.
Bristol Co., Waterbury, Conn.
Brown Instrument Co., Wayne & Windrim Sts., Phila.
Buffalo Meter Co., 2890 Main St., Buffalo, N. Y.
Cambridge Instrument Co., 3732 Grand Cent. Term., N. Y.
G. M. Davis Regulator Co., 2541 S. Washburn, Chicago
Eimer & Amend, 633 Greenwich St., N. Y.
Foxboro Co., Foxboro, Mass.
Liquidometer Corp., Long Island City, N. Y.
Pneumercator Co., Sperry Bldg., Brooklyn
Precision Thermometer Co., 1434 Brandywine St., Phila.
Read Machy. Co., York, Pa.
Republic Flow Meters Co., 2240 Diversey Blvd., Chicago
W. A. Taylor & Co., 7300 York Rd., Baltimore
Taylor Instrument Co., Rochester, N. Y.

IONONE (Violet Base) (see Aromatic Chemicals)

ISO-PROPYL ALCOHOL (see Alcohol, Iso-Propyl)

JACKETED KETTLES (see Kettles)

JAPAN WAX (see Waxes)

JARS, GLASS (see Bottles)

JASMIN, ARTIFICIAL (see Aromatic Chemicals)

KAOLIN (see Clays)

KEROSENE (see Petroleum Insecticide Base Oils)

KETTLES

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Alloy Prods. Corp., 221 Madison St., Waukesha, Wis.
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Aluminum Co. of America, Gulf Bldg., Pittsburgh
Bethlehem Foundry & Mach. Co., Grand Cent. Bldg., N.Y.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259-46th St., Brooklyn
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Littleford Bros., 443 E. Pearl St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Patterson Foundry & Machine Co., East Liverpool, O.
Patterson Kelley Co., East Stroudsburg, Pa.
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Mach. Co., Philadelphia, Pa.

Struthers-Wells Co., Warren, Pa.
Stuart & Peterson Co., Burlington, N. J.
H. B. Trout Co., 240 Ohio St., Buffalo, N. Y.

KIESELGUHR (Infusorial Earth) (see Abrasives and Fillers)

KITS (Wooden) (see Pails, Wooden)

LABELING MACHINES (Bottles and Cans)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Burt Machine Co., Baltimore, Md.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Economic Machinery Corp., Worcester, Mass.
Edward Ermold Co., 652-64 Hudson St., N. Y.
J. L. Ferguson Co., Joliet, Ill.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornsey & Co., 420 Lexington Ave., N. Y.
Mandel Products, 207 Astor St., Newark, N. J.
National Labeling Machine Co., 129 W. 19th St., Long Island City, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
New Jersey Machine Corp., Hoboken, N. J.
Pneumatic Scale Corp., North Quincy, Mass.
Potdevin Machine Co., 1220A 38th St., Bklyn.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Scientific Filter Co., 12 Franklin Square, N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)

LABELING MACHINES (Boxes & Cakes)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
New Jersey Machine Corp., Hoboken, N. J.
Pneumatic Scale Corp., North Quincy, Mass.
Potdevin Machine Co., 1220 38th St., Bklyn.
Scientific Filter Co., 12 Franklin Square, N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)
Stokes & Smith Co., Summerdale, Phila., Pa.

LABELS

American Lithographic Co., 85 N. 3rd St., Brooklyn
Dennison Mfg. Co., Framingham, Mass.
Foxon Co., Providence, R. I.
Henderson Lithographing Co., Norwood, Cincinnati
R. J. Kittredge Co., 812 W. Superior St., Chicago
Label Craft Co., 508 W. Broadway, N. Y.
Strobridge Lithographing Co., Cincinnati
U. S. Printing & Litho. Co., Cincinnati, O.

LABORATORIES, TESTING

Applied Research Laboratories, Dayton, N. J.
Alfred J. Bendler Research Labs., 200 Hart Blvd., Staten Island, N. Y.
Columbus Labs., 33 N. State St., Chicago
Curtis & Tompkins, Ltd., 236 Front St., San Francisco
Dairy Laboratories, 2300 Locust St., Phila.
Harry W. Dietert Co., 9330 Roselawn Ave., Detroit
Elite Laboratories, 153 Center St., N. Y.
Entomological Testing Labs., 114 E. 32nd St., N. Y.
Hochstader Laboratories, Inc., 128 Water St., N. Y.
Illinois Chemical Labs., Gridley, Ill.
James Laboratories, 189 W. Madison St., Chicago
La Wall & Harrison, 214 S. 12th St., Phila.
Lederer Bacteriological Labs., 269 S. 19th St., Phila.
Harold A. Levey Laboratories, Oleander & Dublin Sts., New Orleans
J. W. McCutcheon, 475 Fifth Ave., N. Y.
Molnar Laboratories, 211 E. 19th St., N. Y.
Pease Laboratories, 39 W. 38th St., N. Y.
Rosoff Laboratories, 60th & Osage, Phila.
Samuel P. Sadlier & Son, 210 S. 13th St., Phila.
Seil, Putt & Rusby, 16 E. 34th St., N. Y.
Skinner & Sherman, 246 Stuart St., Boston

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Foster D. Snell, 29 W. 15th St., N. Y.
Stillwell & Gladding, 130 Cedar St., N. Y.
United States Testing Co., 1415 Park Ave., Hoboken,
N. J.
Whitmire Res. Labs., 339 Vandeventer, St. Louis

Thompson-Hayward Chemical Co., Kansas City, Mo.
Jos. Turner & Co., Ridgefield, N. J.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City

LABORATORY ANIMALS

Albino Farms, Red Bank, N. J.
Breeding & Lab. Inst., 619 Kent Ave., Brooklyn

LAUNDRY BLUING

American Soap & Washoline Co., Cohoes, N. Y.
Brilco Labs., 947-61st St., Brooklyn
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., 538 Smithfield St., Pittsburgh
Fezandie & Sperrie, 205 Fulton St., N. Y.
Interstate Color Co., 5 Beekman St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pylam Products Co., 799 Greenwich St., N. Y.
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City
Welch, Holme & Clark Co., 439 West St., N. Y.

LABORATORY APPARATUS

Central Scientific Co., 1700 W. Irving Pk., Chicago
Harry W. Dieter Co., 9330 Roselawn Ave., Detroit (de-
vice for determining moisture content)
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Eimer & Amend, 633 Greenwich St., N. Y.
Fisher Scientific Co., Pittsburgh
Emil Greiner Co., 161-6th Ave., N. Y.
Laboratory Construction Co., 111 Holmes St.,
Kansas City, Mo.
Pfaltz & Bauer, 350-5th Ave., N. Y.
Scientific Materials Co., Pittsburgh
Arthur H. Thomas Co., Wash Sq., Phila.
Will Corp., Rochester, N. Y.

LAUNDRY SOAP, CAKE

Aid Soap Mfg. Co., 1962 Enoch St., Pittsburgh, Pa.
American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Fels & Co., Philadelphia
Hewitt Soap Co., Dayton, O.
Kamen Soap Prods. Co., 233 Bway., N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St.,
Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Manhattan Soap Co., Bristol, Pa.
National Soap Co., 357 S. 25th St., Tacoma, Wash.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
North Coast Chem. & Soap Wks., Seattle, Wash.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Texas Soap Mfg. Co., 4905 Calhoun Rd., Houston
Vliet Soap Co., 638 Monroe St., Brooklyn, N. Y.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Miss.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wriley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LABORATORY CHEMICALS

J. T. Baker Chemical Co., Phillipsburg, N. J.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Mallinckrodt Chemical Works, 3600 N. 2nd St., St. Louis
Merck & Co., Rahway, N. J.

LAUNDRY SOAP, CHIP

Aid Soap Mfg. Co., 1962 Enoch St., Pittsburgh, Pa.
American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Chem. Mfg. & Dist. Co., Easton, Pa.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Du Bois Soap Co., Cincinnati, O.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Harris Soap Co., Buffalo, N. Y.
Hewitt Soap Co., Dayton, Ohio
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St.,
Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Mackenzie Laboratories, Front & Yarnall Sts., Chester,
Pa.
Nat'l Milling & Chem. Co., Manayunk, Phila.
Nopeo Chem. Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Seaboard Distributors, 60 Park Pl., Newark, N. J.

LANOLIN

American Chemical Paint Co., Ambler, Pa.
American Lanolin Corp., Lawrence, Mass.
Bopf-Whittam Corp., Linden, N. J.
Botany Worsted Mills, Passaic, N. J.
Frank G. Fanning, 50 E. 42nd St., N. Y.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Griffin Chem. Co., 1000 16th St., San Francisco
Hummel Chemical Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lanacetex Prods. Sales Corp., Elizabeth, N. J.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350 5th Ave., N. Y.
Robinson-Wagner Co., 110 E. 42nd St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Welch, Holme & Clark, 439 West St., N. Y.

LAUNDRY BLEACH (Sodium Hypochlorite)

American Soap & Washoline Co., Cohoes, N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chrisman Supply Co., Fayetteville, N. Y.
Cowles Detergent Co., 7016 Euclid Ave., Cleveland.
Delta Chemical Mfg. Co., 2101 Washington Blvd.,
Baltimore
Gaylor Chem. Co., 701 Woodswether Rd., Kansas City,
Mo.
Higley Chemical Co., Dubuque, Iowa
Hyasan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Legrand Bleach Corp., 111-49th St., Brooklyn
Lorenz Chem. Co., 135 No. 32nd Ave., Omaha
Mathieson Chemical Corp., 60 E. 42nd St., N. Y.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis, Mo.
Peck's Prods. Co., 620 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div.,
Grant Bldg., Pittsburgh
Sergeant Chem. Co., 7 Dey St., N. Y.
Surpass Chemical Co., Albany, N. Y.
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston

LAUNDRY SOAP, CHIP (Contd.)

Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAUNDRY SOAP, POWD. AND GRAN.

Aid Soap Mfg. Co., 1962 Enoch St., Pittsburgh, Pa.
American Soap Powder Wks., 100 Van Dyke St.,
Brooklyn, N. Y.
American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Chemical Mfg. & Dist. Co., Easton, Pa.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati, O.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City,
Mo.
Hewitt Soap Co., Dayton, Ohio
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Los Angeles Soap Co., Los Angeles, Calif.
Mackenzie Laboratories, Front & Yarnell Sts., Chester,
Pa.
Miranol Chemical Co., P. O. Box 118, Milltown, N. J.
Naphthole, Inc., 15 E. 26th St., N. Y.
Nat'l Milling & Chem. Co., Manayunk, Phila.
Nopco Chem. Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Stevens Soap Corp., 202 Sullivan St., Brooklyn
Swift & Co., Union Stock Yards, Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAUNDRY SODA, (see Soda)

LAUNDRY SOURS (Fluoride, etc.)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
American Cyanamid & Chem. Corp., 30 Rockefeller
Plaza, N. Y.
American Fluoride Corp., 151 W. 19th St., N. Y.
Blockson Chemical Co., Joliet, Ill.
Chemical Mfg. & Dist. Co., Easton, Pa.
Croton Chem. Corp., 114 Liberty St., N. Y.
Diamond Alkali Co., 535 Smithfield Ave., Pittsburgh, Pa.
General Chem. Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hummel Chem. Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penn. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Port Huron Detergent Co., Port Huron, Mich.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Standard Chem. Co., Columbus, O.
John T. Stanley Co., 642 W. 30th St., N. Y. C.
Henry Sundheimer, Inc., 103 Park Ave., N. Y.
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston

Thompson-Hayward Chemical Co., Kansas City, Mo.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago
Welch Holme & Clark, Inc., 439 West St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAVENDER OIL (see Essential Oils)

LAURIC ACID (see also Fatty Acids)

Armour Chem. Div., Armour & Co., 1355 W. 31st St., Chi-
cago
E. F. Drew & Co., Boonton, N. J.
El Dorado Oil Wks., 311 California St., San Francisco
Woburn Chemical Corp., Harrison, N. J.

LAURYL ALCOHOL

E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y. C.
M. Michel & Co., 95 Broad St., N. Y.
Robinson Wagner Co., 110 E. 42nd St., N. Y.

LEAD ARSENATE

Amer. Agricultural Chem. Co., 50 Church St., N. Y.
American Cyanamid & Chem. Co., 30 Rockefeller Plaza,
N. Y.
California Spray-Chemical Corp., Lucas & Ortho Way,
Richmond, Calif.
Chipman Chem. Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Sherwin-Williams Co., Cleveland, O.

LECITHIN

American Lecithin Corp., Corona Ave., Elmhurst, L. I.
Chemical Novelties Corp., 946 W. 5th St., Cincinnati
W. A. Cleary Corp., New Brunswick, N. J.
Digestive Ferments Co., 930 Henry St., Detroit
Enco Co., 441 Lexington Ave., N. Y.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Merck & Co., Rahway, N. J.
Ross & Rowe, Inc., 50 Broadway, N. Y.
Robinson Wagner Co., 110 E. 42nd St., N. Y.
Soya Corp. of America, 30 Rockefeller Plaza, N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Welch Holme & Clark, Inc., 439 West St., N. Y.
Wilson Labs., 4221 S. Western Blvd., Chicago

LEMON OIL, LEMONGRASS OIL (see Essential Oils)

LIME (Live and Hydrated)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
California Spray-Chemical Corp., Lucas & Ortho Way,
Richmond, Calif.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours, Wilmington, Del.
Hoosac Valley Lime Co., Adams, Mass.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lehigh Lime Co., 111 W. Washington St., Chicago
National Gypsum Co., 192 Delaware Ave., Buffalo, N. Y.
Rockland-Rockport Lime Co., Rockland, Maine
William H. Scheel, Inc., 38 Franklin St., Brooklyn
U. S. Lime Prods. Corp., 85 Second St., San Francisco
Whiterock Quarries, Inc., Bellefonte, Pa.
Whittaker, Clark & Daniels, Inc., 260 Bway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

LIME SULFUR

Allen Co., Pittstown, N. J.
California Spray-Chemical Corp., Lucas & Ortho Way,
Richmond, Calif.
Chipman Chemical Co., Bound Brook, N. J.
Corn King Co., Cedar Rapids, Ia.

LIME SULFUR (Contd.)

Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Sherwin-Williams Co., Cleveland, O.
Taylor Chem. Wks., Aberdeen, N. C.

LINALOE OIL (see Essential Oils)

LINALOOL (see Aromatic Chemicals)

LINALYL ACETATE (see Aromatic Chemicals)

LINERS (see Bag Liners)

LINING MACHINERY (Cartons)

Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago

LINSEED OIL

(*see also Brokers and Dealers*)

Archer-Daniels-Midland Corp., Minneapolis, Minn.
Bisbee Linseed Co., Philadelphia
William O. Goodrich Co., Milwaukee, Wis.
Spencer Kellogg & Sons, Buffalo, N. Y.
Kellogg & Miller, Amsterdam, N. Y.
Minnesota Linseed Oil Co., Minneapolis, Minn.
Pacific Vegetable Oil Corp., 62 Townsend St.,
San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
A. E. Starkie Co., 5461 W. Division St., Chicago
Welch Holme & Clark Co., 439 West St., N. Y.

LINSEED OIL SOAP (see Potash Soaps)

LIQUID SOAP AND BASE (see Potash Soap)

MACHINERY, USED (see Used Machinery)

MAGNESIUM OXIDE (Magnesia)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Merck & Co., Rahway, N. J.
Michigan Chem. Corp., St. Louis, Mich.
E. E. Schundler & Co., Joliet, Ill.
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chlorine Prods., 405 Lexington Ave., N. Y.
Whittaker, Clark & Daniels, Inc., 280 Broadway, N. Y.
Witeco Chemical Co., 295 Madison Ave., N. Y.

MAGNESIUM STEARATE (see Stearates)

MAHOGANY SULFONATES (see Naphthenic Acids)

MAHOGANY SOAP (This term also used to designate Petroleum Sulfonates. See also Naphthenic Acids, Naphthalene Sulfonates.)

Armour Soap Wks., 1355 W. 31st St., Chicago
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Emery Industries, 4300 Carew Tower, Cincinnati
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Los Angeles Soap Co., Los Angeles, Calif.
Oil States Pet. Co., 238 Broadway, N. Y.
Oronite Chemical Co., 200 Bush St., San Francisco
John T. Stanley Co., 642 W. 30th St., N. Y.

MANILA GUMS

T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Gillespie-Rogers-Pyatt Co., 80 John St., N. Y.
O. G. Innes Corp., 82 Wall St., N. Y.
Wm. H. Scheel, Inc., 38 Franklin Street, Brooklyn
U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.

MARINE SOAPS (see Salt Water Soaps)

MECHANIC'S HAND PASTE (see Hand Soap)

MEDICINAL SOAPS, CAKE

Armour Soap Wks., 1355 W. 31st St., Chicago
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles, Calif.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
Procter & Gamble Co., Cincinnati
Rare Chemicals, Inc., First & Essex Sts., Harrison, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

MEDICINAL SOAPS, LIQUID (see Potash Soaps)

MENTHOL

(*see also Essential Oils*)

Bendix Chem. Corp., 120 Lexington Ave., N. Y.
S. W. Bridges & Co., 82 Wall St., N. Y.
Consumers Import Co., 350 Fifth Ave., N. Y.
Dodge & Olcott, Inc., 180 Varick St., N. Y.
P. R. Dreyer, 119 W. 19th St., N. Y.
Enco Chem. Corp., 441 Lexington Ave., N. Y.
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Magnus, Mabes & Reynard, Inc., 16 Desbrosses St., N. Y.
A. Maschmeijer, Jr., Inc., 45 W. 16th St., N. Y.
McKesson & Robbins, Inc., 155 E. 42nd St., N. Y.
Norda Essential Oil & Chem. Co., 601 W. 26th St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Sherka Chemical Co., 86 Orange St., Bloomfield, N. J.
Tombarel Prods., 12 E. 22nd St., N. Y.

MERCURY BICHLORIDE (Corrosive Sublimate)

J. T. Baker Chem. Co., Phillipsburg, N. J.
F. W. Berk & Co., Wood Ridge, N. J.
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Heyden Chemical Corp., 393 7th Ave., N. Y.
Mallinckrodt Chemical Works, St. Louis
Merck & Co., Rahway, N. J.
Metalsalts Corp., 27 First Ave., Paterson, N. J.
New York Quinine & Chem. Wks., N. 11th & Berry Sts.,
Brooklyn
Chas. Pfizer & Co., 81 Maiden Lane, N. Y.

METAL PAILS, etc. (Waste Baskets, Receptacles, Spittoons, etc., Garbage Pails & Barrels)

Justrite Mfg. Co., 2061 N. Southport Ave., Chicago
National Enameling & Stamping Co., Milwaukee, Wis.
F. H. Lawson Co., Cincinnati
Solar Receptacle Co., Melrose Park, Ill.
Wheeling Corrugating Co., Wheeling, W. Va.,
Witt Cornice Co., 2118 Winchell Ave., Cincinnati

METAL POLISH (see Polish)

METALLIC SOAPS (see Stearates)

METERS (see Instruments)

METHANOL (Synthetic)

Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Merck & Co., Rahway, N. J.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.

METHYL ANTHRANILATE

(see also Aromatic Chemicals)

Aromatic Products, Inc., 15 E. 30th St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours, Wilmington, Del.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Florasynth Labs., Olmstead & Starling Aves., N. Y.
A. Maschmeijer, Jr., Inc., 45 W. 16th St., N. Y.

METHYL BROMIDE

Dow Chemical Co., Midland, Mich.
Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles
Michigan Chem. Co., St. Louis, Mich.
Westvaco Chlorine Prods. Corp., 405 Lexington Av., N. Y.

METHYL CELLULOSE

Dow Chemical Co., Midland, Mich.
General Dyestuff Corp., 435 Hudson St., N. Y.
Hercules Powder Co., Wilmington, Del.

METHYL SALICYLATE (Artificial Wintergreen)

(see also Aromatic Chemicals)

J. T. Baker Chem. Co., Phillipsburg, N. J.
Dow Chemical Co., Midland, Mich.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Heyden Chemical Corp., 393 7th Ave., N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis

MILLS, SOAP POWDER (see Soap Machinery & Grinding Machinery)

MINERAL OIL, WHITE (see White Mineral Oil)

MINERAL SOAP (see Petrolatum)

MIRBANE OIL (Nitrobenzene)

(see also Essential Oils)

Calco Chemical Co., Bound Brook, N. J.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Naugatuck Aromatics, Inc., 254 Fourth Ave., N. Y.

MIXERS (Portable)

Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Allied Steel & Equipment Co., 1007 Springfield Ave.,
Irvington, N. J.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Ertel Eng. Co., Kingston, N. Y.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Frank B. Lomax Co., 365 W. Oak St., Chicago
Mixing Equipment Co., Inc., 1067 Garson Ave.,
Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
Patterson Fdy. & Mch. Co., E. Liverpool, O.
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy. Co., York, Pa.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)

MIXING MACHINERY (Change Can Mixers)

Abbe Engineering Co., 50 Church St., N. Y.
Allied Steel & Equipment Co., 1007 Springfield Ave.,
Irvington, N. J.
Amer. Mach. & Foundry Co., 511 5th Ave., N. Y.
Arthur Colton Co., Detroit, Mich.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machy. Co., Hawthorne, N. J.
Kent Machine Works, 39 Gold St., Brooklyn
Mixing Equipment Co., Inc., 1067 Garson Ave.,
Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Read Machy. Co., York, Pa.
Robinson Mfg. Co., Munsey, Pa.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Chas Ross & Son Co., 150 Classon Ave., Brooklyn
Scottdel, Inc., Swanton, Ohio
Sprout Waldron & Co., Munsey, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Corp., Warren, Pa.
Aurelio Tanzi Engineering Co., 430 Jefferson St., Bklyn.

MIXING MACHINERY (Dry Products)

Abbe Engineering Co., 50 Church St., N. Y.
Allied Steel & Equipment Co., 1007 Springfield Ave.,
Irvington, N. J.
Amer. Mach. & Foundry Co., 511 5th Ave., N. Y.
Atlas Steel Construction Co., Irvington, N. Y.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 157 Hudson St., N. Y. (Used)
B. F. Gump Co., 412 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259-46th St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Read Machy. Co., York, Pa.
Robinson Mfg. Co., Munsey, Pa.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Chas Ross & Son Co., 150 Classon Ave., Brooklyn
Scottdel, Inc., Swanton, Ohio
Sprout Waldron & Co., Munsey, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Corp., Warren, Pa.
Aurelio Tanzi Engineering Co., 430 Jefferson St., Bklyn.

MIXING MACHINERY (General)

Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Allied Steel & Equipment Co., 1007 Springfield Ave.,
Irvington, N. J.
Amer. Mach. & Foundry Co., 511 5th Ave., N. Y.
Baker-Perkins Co., 250 Park Ave., N. Y.
Beach-Russ Co., 50 Church St., N. Y.
Arthur Colton Co., Detroit
Consolidated Prod. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Eastern Engineering Co., 45 Fox St., New Haven
Edge Moor Iron Wks., Edge Moor, Del.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
B. F. Gump Co., 431 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259-46th St., Brooklyn
Kent Machine Co., 37 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., Lyndhurst, N. J.
Littleford Bros., 443 E Pearl St., Cincinnati
Mixing Equipment Co., 1067 Garson Ave.,
Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St.,
Chicago (Used)
Pfaudler Co., 89 East St., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Read Machinery Co., York, Pa.
Robinson Mfg. Co., Munsey, Pa.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Scottdel, Inc., Swanton, Ohio
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N. Y.
Sprout Waldron & Co., Munsey, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.

MIXING MACHINERY (General) (Contd.)

F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Tu-bo Mixer Corp., 247 Park Ave., N. Y.
Waterville Foundry & Machine Co., Waterville, N. Y.

MONTAN WAX (see Waxes)

MOP HANDLES

Amer. Standard Mfg. Co., 2509 S. Green St., Chicago
Stanley H. Coffin, 12 Pearl St., Boston
Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Erie Mop & Wringer Co., East Rochester, N. Y.
Howard Dustless Duster Co., Boston
W. E. Kautenberg Co., Freeport, Ill.
Marvel Mop Division, Zelinkoff Co., Wichita, Kans.
Massasoit Mfg. Co., 72 Park Pl., N. Y.
Rex-Cleanwall Corp., Brazil, Ind.
Rubon Wood Finishing & Prods. Co., 500 W. 7th St.,
Kansas City, Mo.
Silver-Chamberlain Co., Clayton, N. Y.
White Mop Wringer Co., Fultonville, N. Y.

MOP WRINGERS AND PAILS

Howard J. Barrett, 1908 Walnut St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston
Colson Mfg. Co., Elyria, O.
Dobbins Mfg. Co., Elkhart, Ind.
Eagle Woodenware Mfg. Co., Hamilton, Ohio
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Geuder, Paesche & Frey, Milwaukee, Wis.
Illinois Duster Co., 1944 Webster Ave., Chicago
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Muskegon Sanitary Supply Co., Muskegon Heights, Mich.
Palmer Fixture Co., Waukesha, Wisc.
Sweet Mop Co., 1913 Fremont Ave., South Pasadena, Cal.
White Mop Wringer Co., Fultonville, N. Y.

MOPPING TANKS AND TRUCKS

Howard J. Barrett, 1908 Walnut St., Phila.
Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Palmer Fixture Co., Waukesha, Wisc.
White Mop Wringer Co., Fultonville, N. Y.

MOPS

Alabama Broom & Mattress Co., Huntsville, Ala.
Amer. Standard Mfg. Co., 2509 S. Green St., Chicago
Amer. Textile Prods. Co., 5606 Euclid Ave., Cleveland
Burgett-Rose Mfg. Co., 6100 Independence Rd., Kansas
City, Mo.
California Cotton Mills Co., Oakland, Calif.
Chattanooga Broom & Mop Co., Chattanooga, Tenn.
Clark Bros. Mfg. Co., 34 N. Front St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston, Mass.
Eagle Woodenware Mfg. Co., Hamilton, O.
Golden Star Polish Mfg. Co., 2901 E. 18th St., Kansas
City, Mo.
Howard Dustless Duster Co., Boston, Mass.
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
Klenzall Mfg. Co., Atlanta, Ga.
Marvel Mop Division, Zelinkoff Co., Wichita, Kans.
Palmer Fixture Co., Waukesha, Wisc.
Pioneer Mfg. Co., Cleveland, Ohio
Rex-Cleanwall Corp., Brazil, Ind.
Rubon Woodfinishing & Prod. Co., 500 W. 7th St.,
Kansas City, Mo.
Silver-Chamberlain Co., Clayton, N. Y.
T. C. Smyth Mfg. Co., Union City, Ind.
Sweet Mop Co., 1913 Fremont Ave., South Pasadena, Cal.
Tate Mfg. Co., Boston, Mass.
M. J. Toohey & Co., Fall River, Mass.
Tuscaloosa Mills, Tuscaloosa, Ala.
Tu-Way Products Co., 1423 Franklin St., Detroit
Yocma Mills, Water Valley, Miss.

MOSQUITO LARVICIDES

Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Associated Chemists, Inc., 1906 N. Halsted St., Chicago
Baird & McGuire, Inc., Holbrook, Mass.
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Chipman Chemical Co., Bound Brook, N. J.
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 932 W. 38th Place, Chicago
Ketoid Chem. Co., 339 S. Van Deventer, St. Louis
Koppers Co., White Tar Div., Kearny, N. J.
McCormick & Co., Inc., Baltimore, Md.
Merck & Co., Rahway, N. J.
Michigan Chem. Corp., St. Louis, Mich.
R. J. Prentiss & Co., 110 William St., N. Y.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Shell Oil Co., 50 W. 50th St., N. Y.
Texol Chemical Works, 3 Winter St., Worcester, Mass.
Uncle Sam Chemical Co., 573 W. 131st St., St. N. Y. C.
Thompson-Hayward Chemical Co., Kansas City, Mo.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
James Varley & Sons, 2100 Switzer Ave., St. Louis
Velsicol Corp., 120 E. Pearson St., Chicago
York Chem. Co., 23 Dean St., Bklyn.

MOTH BAGS

Clopay Co., Cincinnati
Kennedy Car Liner Co., Indianapolis
LeMontre Co., Cincinnati
Rosette Co., 200 Tillary St., Brooklyn

MOTH PROOFING COMPOUNDS

American Cyanamid & Chemicals Corp.,
30 Rockefeller Plaza, N. Y.
Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Antara Prods. Div., Gen. Aniline & Film Corp., 444
Madison Ave., N. Y.
Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
Barrett Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Baird & McGuire, Inc., Holbrook, Mass.
Bilco Labs., 947—61st St., Brooklyn
Cenol Co., 4250 N. Crawford Ave., Chicago
Chem. Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Dow Chemical Co., Midland, Mich.
Eagle Soap Corp., Huntington, Ind.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Edelman Co., 6429 S. St. Lawrence Ave., Chicago
Elkay Prods. Co., 323 W. 16th St., N. Y.
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fine Organics, Inc., 211 E. 19th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Geigy Co., 89 Barclay St., N. Y.
General Dyestuffs Corp., 435 Hudson St., N. Y.
James Good Co., Susquehanna Ave. & Martha St., Phila.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Harrison Oil Co., 5110 N. 35th St., Milwaukee
Hercules Powder Co., Wilmington, Del.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman Co., Providence, R. I.
R. M. Hollingshead Corp., Camden, N. J.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave.,
Chicago

WURSTER & SANGER, INC.

Contracting and Consulting Chemical Engineers

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Hydrogen
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Evaporation in Single, Double and Multiple Effects
Fat Splitting: Twitchell and Autoclave Processes
Stearic Acid and Red Oil
Fatty Acid Distillation
Laundry and Toilet Soaps
Spray-Process Soap Plants
Oil Extraction and Degreasing
Glue and Gelatine
Continuous Glue Evaporation

Development of Processes, Reports, Investigations

W & S GLYCERINE EVAPORATORS

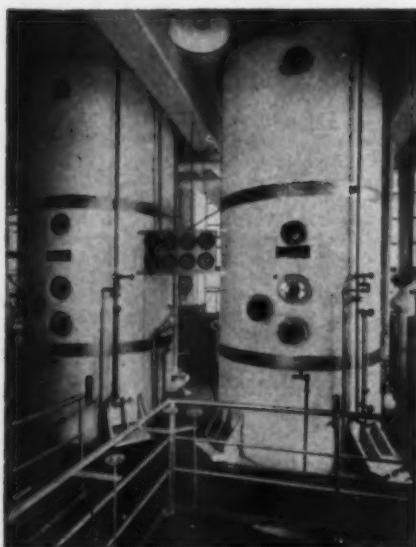
The improved WURSTER & SANGER Soap Lye Evaporator constitutes a marked advance in calandria design. Positive circulation of liquor in a definite direction has proved to increase the rate of evaporation and promote the separation of large crystals.

The WURSTER & SANGER Sweet-Water Evaporator has fulfilled the long need of complete accessibility for cleaning of tubes. It is equipped with an external heating element which affords high liquid velocity and a high rate of heat transfer.

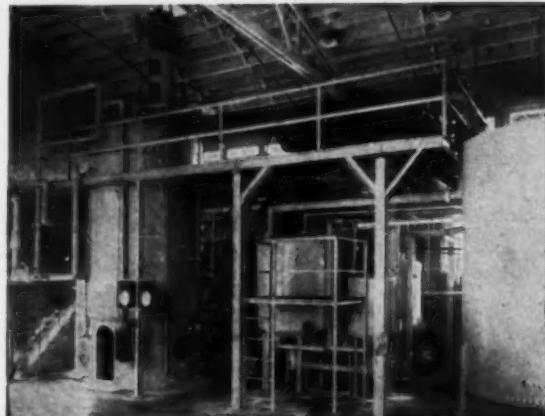
CONTINUOUS GLYCERINE REFINING

Our Continuous Glycerine Refining Plants represent the most modern and economical equipment for the production of Dynamite, High Gravity and C. P. grades from Crude. We have developed a plant which is an improvement over all former methods of distilling glycerine.

Our plants are producing C. P. glycerine in one distillation with low steam consumption and yields of over 98% from Soap Lye Crude. All glycerine is condensed in concentrated form eliminating the handling of sweet-waters. Continuous operation and automatic controls reduce the operating attention to a minimum.



Wurster & Sanger Double Effect Soap Lye Glycerine Evaporator



Wurster & Sanger Hydrogenation Plant

HYDROGENATION PLANTS

WURSTER & SANGER Oil Hardening Plants are built for partially or completely hardening vegetable oils, fish oils, lard and tallow, for edible and technical purposes.

Our plants are simple, efficient and economical in operation and give uniform products of highest quality.

W & S CATALYST REDUCER

The operation of the WURSTER & SANGER Wet Catalyst Reducer is completely automatic, resulting in a uniform catalyst of the greatest activity, longest life and least susceptibility to poisons. The hazards encountered in dry reduction methods are eliminated. Operating costs are extremely low.

SOAP AND SOAP POWDER PLANTS

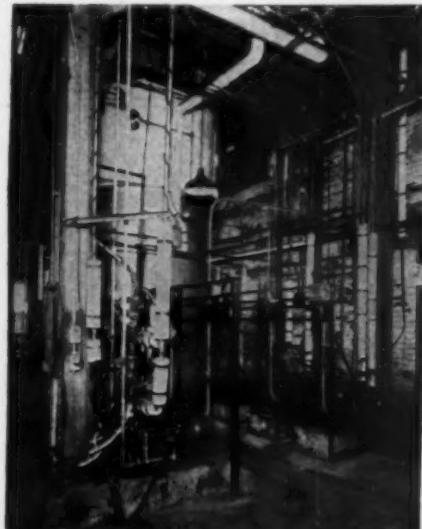
We specialize in the engineering design of soap plants. Our Spray-Process Soap Powder Plant is producing soap powder at the lowest production cost.

OIL REFINING AND DEODORIZING PLANTS

WURSTER & SANGER Oil Refining and Deodorizing Plants for the production of edible oils are suitable for cottonseed, corn, soybean, peanut, coconut and other oils. Our equipment, processes and services cover completely all phases of this industry.

FATTY ACID DISTILLATION

WURSTER & SANGER Fatty Acid Distillation Plants, continuous and batch type, are of improved design and construction throughout. Operation is under high vacuum and at low temperature, producing a superior quality of distilled fatty acids with high yields.



Wurster & Sanger Continuous Fatty Acid Distillation Plant

MOTH PROOFING COMPOUNDS (Contd.)

Koppers Co., White Tar Div., Kearny, N. J.
Kwik Products Co., 451 W. 28th St., N. Y.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Merck & Co., Rahway, N. J.
Michigan Chem. Corp., St. Louis, Mich.
Midway Chemical Co., 5235 W. 65th St., Chicago
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Per-Mo Products Co., 3604 Woodland Ave., Kansas City, Mo.
Puro Co., 2801 Locust St., St. Louis
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Reilly Tar & Chemical Corp., Indianapolis
Rohm & Haas Co., 222 W. Washington Sq., Philadelphia
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., New York
Thompson-Hayward Chemical Co., 2915 S. W. Blvd., Kansas City, Mo.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Joseph Turner Co., Ridgefield, N. J.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Whitmire Research Corp., 339 S. Vandeventer, St. Louis
G. H. Wood & Co., Toronto, Ont., Canada

MOTH SPRAYS (see Household Insecticides, Liquid; Moth Proofing Compounds.)

MOTTLED SOAPS

Lightfoot Schultz Co., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
National Soap Co., P. O. Box 1613, Tacoma, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

MOUSE SEEDS (see Poisoned Seeds)

MUSKS, ARTIFICIAL (see Aromatic Chemicals)

NAPHTHA (see Solvent Naphtha)

NAPHTHALENE

American-British Chem. Supplies, 180 Madison Ave., Barrett Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Dominion Tar & Chem. Co., Ltd., Montreal
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., White Tar Div., Kearny, N. J.
Neville Co., Pittsburgh
Reilly Tar & Chem. Corp., Indianapolis
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Standard Naphthalene Prods. Co., S. Kearny, N. J.
Velsicol Corp., 330 E. Grand Ave., Chicago

NAPHTHALENE SULFONATES

Alrose Chem. Co., Box 1294, Providence, R. I.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
General Dyestuffs Corp., 435 Hudson St., N. Y.
National Aniline & Chem. Div., 40 Rector St., N. Y.
Nopco Chem. Co., Harrison, N. J.
Pennsylvania Refining Co., Butler, Pa.
Richard Sales Corp., Jersey City, N. J.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.

NAPHTHENATES (see Copper Naphthenate, Zinc Naphthenate)

NAPHTHENIC ACIDS (and Sulfonic Sludges)

Advance Solvents & Chem. Co., 245—5th Ave., N. Y.
Atlantic Refining Co., 260 Broad St., Philadelphia

General Petroleum Corp., 108 W. 2nd St., Los Angeles
Hummel Chem. Co., 90 West St., N. Y.
Nuodex Prods. Co., Elizabeth, N. J.
Oronite Chem. Co., 200 Bush St., San Francisco 4
Pennsylvania Refining Co., Butler, N. J.
Petroleum By-Products Co., 15 Whitehall St., N. Y.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Sherwood Refining Co., Englewood, N. J.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.

NICKEL-CLAD EQUIPMENT (see also Soap Machinery)

Allied Steel & Equipment Co., 1007 Springfield Ave., Irvington, N. J.
Edge Moor Iron Wks., Edge Moor, Del.
Houchin Machinery Co., Hawthorne, N. J.
International Nickel Co., 67 Wall St., N. Y.
Alan Porter Lee, Inc., 150 Broadway, N. Y.
Littleford Bros., 453 E. Pearl St., Cincinnati
Lukens Steel Corp., Coatesville, Pa.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
F. J. Stokes Machine Co., Philadelphia
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

NICOTINE COMPOUNDS

California Spray-Chemical Corp., Lucas & Ortho Way, Richmond, Calif.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
E. I. du Pont de Nemours, Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Hood River Spray Co., Hood River, Ore.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Sanocide Spray Co., Fennville, Mich.
Tobacco By-Products & Chem. Corp., Louisville.

NITRE CAKE (Sodium Acid Sulfate)

Amer. Agricultural Chem. Co., 50 Church St., N. Y.
Amer. Cyanamid & Chem. Co., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Chas. Lennig & Co., 222 W. Washington Sq., Philadelphia
Monsanto Chemical Co., 1724 S. 2nd St., St. Louis
Penna Salt Mfg. Co., Philadelphia
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.

NITROPARAFFINS

Commercial Solvents Corp., 17 E. 42nd St., N. Y.

NON-SOAP DETERGENTS (see Detergents, Synthetic)

NOVELTY SOAPS

Armour & Co., 1355 W. 31st St., Chicago
Illustrated Soap Co., 43 W. 10th St., N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Peck's Products Co., 620 E. Clarence Ave., St. Louis
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Unique Soaps, P. O. Box No. 61, Covington, Ky.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

NOZZLES, FOR SPRAY SYSTEMS

Spraying Systems Co., 4027 W. Lake St., Chicago

ODORLESS KEROSENE (see Petroleum Insecticide Base Oils, Deodorized)

OIL, BASE, (see Petroleum Insecticide Base Oils)

OIL HYDROGENATION PLANTS

William Garrigue Co., 9 S. Clinton St., Chicago
Alan Porter Lee, 150 Broadway, N. Y.
Robinson, Butler, Hemingway & Co., Bound Brook, N. J.
Struthers Wells Titusville Corp., Warren, Pa.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

OIL MILL EQUIPMENT

V. D. Anderson Co., 1935 W. 96th St., Cleveland
Bauer Bros. Co., Springfield, O.
Buckeye Iron & Brass Works, Dayton, O.
French Oil Mill Mach. Co., Piqua, O.
William Garrigue Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 150 Broadway, N. Y.
Robinson, Butler, Hemingway Co., Bound Brook, N. J.
Ernest Scott & Co., Fall River, Mass.
Sprout Waldron & Co., Muncy, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

OIL SOAP (see Potash Soaps)

OLEIC ACID (see Red Oil)

OLIVE OIL (Commercial)

(*see also Brokers and Dealers*)

Irving R. Boody & Co., 120 Wall St., N. Y.
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Eastern Industries, Inc., Ridgefield, N. J.
W. R. Grace & Co., 7 Hanover Sq., N. Y.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Leighorn Trading Co., 21 West St., N. Y.
J. H. Redding Co., 17 Battery Pl., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

OLIVE OIL FOOTS

(*see also Brokers and Dealers*)

T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Eastern Industries, Inc., Ridgefield, N. J.
Leighorn Trading Corp., 21 West St., New York
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
J. H. Redding Co., 17 Battery Pl., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

OLIVE OIL SOAPS (see Castile Soaps, Textile Soaps)

ORTHODICHLORBENZENE (see listings under Paradichlorbenzene)

OXALIC ACID

(*see also Dealers*)

Amer. Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Faesly & Besthoff, Inc., 22 E. 40th St., N. Y.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., St. Louis, Mo.
Merck & Co., Rahway, N. J.
R. J. Prentiss & Co., 110 William St., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Tamma Silica Co., 228 N. La Salle St., Chicago
Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Works, 141 W. Jackson Blvd., Chicago

PACKAGING (for the Trade)

Bonewitz Chemicals, Inc., Burlington, Ia.
Chem. Prods. Co. of N. J., 207 Astor St., Newark, N. J.
Commercial Cleanser Co., 2924 Armitage Ave., Chicago
Emfo Corp., 87 Maiden Lane, N. Y.
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City
R. Gesell, Inc., 206 W. Houston St., N. Y.
Harwin Laboratories, 44 Willow St., Newark, N. J.

McKay-Davis Co., 851 Islington St., Toledo
Packaging Service, 2458 W. 63rd St., Chicago
Seaboard Mfg. Labs., Tulip & Dauphin Sts., Phila.
Stevens Wiley Mfg. Co., Hancock, Palestorp & W. Berks
Sts., Phila. 22, Pa.
Trans-Pac Services, Inc., 602 W. 52nd St., N. Y.
Waverly Mfg. Co., 2133 Orthodox St., Phila.
Van Pell Chem. & Supply Corp., 48 E. First St., N. Y.

PACKAGING MACHINERY (see Cartoning Machy., Filling Machy., Weighing Equip., Wrapping Machy.)

PAILS (Fibre) (see Barrels, Fibre)

PAILS, STEEL (Receptacles), (see Metal Pails)

PAILS, STEEL, (Shipping Containers)

American Can Co., 230 Park Ave., N. Y.
Bennett Mfg. Co., 14600 Princeton Ave., Chicago
Cans, Inc., 3217 W. 47th Pl., Chicago
Central Can Co., 2415 W. 19th St., Chicago
Columbia Can Co., 315 Wyckoff Ave., Brooklyn
Continental Can Co., 100 E. 42nd St., N. Y.
Fein's Tin Can Co., Bush Terminal, Brooklyn
Filter Paper Co., 2464 S. Michigan Ave., Chicago
Gueder, Paeschke & Frey Co., Milwaukee
Inland Steel Container Co., 6532 S. Menard Ave., Chicago
National Can Co., 110 E. 42nd St., N. Y.
National Steel Barrel Co., 3860 E. 91st St., Cleveland
Pittsburgh Can Co., Pittsburgh, Pa.
Pressed Steel Tank Co., 5717 Greenfield Ave., Milwaukee
Rheem Mfg. Co., 570 Lexington Ave., N. Y.
F. C. Thornton Co., 6712 Union Ave., Cleveland
John Trageser Steam Copper Works, Maspeth, L. I.
U. S. Steel Prods. Co., 30 Rockefeller Plaza, N. Y.
Vulcan Stamping & Mfg. Co., Bellwood, Ill.
Wheeling Corrugating Co., Wheeling, W. Va.

PAILS (Wooden)

Beaver Mills, Keene, N. H.
Eagle Woodenware Mfg. Co., Hamilton, O.
Gambrinus Cooperage Works, Louisville
Impervious Package Co., Keene, N. H.
Menasha Woodenware Co., Menasha, Wis.
Richmond Cedar Works, Richmond, Va.

PALM KERNEL OIL

(*see also Brokers and Dealers*)

Balfour Guthrie & Co., 67 Wall St., N. Y.
Irving R. Boody & Co., 120 Wall St., N. Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Leighorn Trading Corp., 21 West St., N. Y.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco, Calif.
Spencer Kellogg & Sons, Buffalo, N. Y.
J. H. Redding Co., 17 Battery Pl., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.
Zimmerman Alderson Carr Co., 25 Broadway, N. Y.

PALM OIL

(*see also Brokers and Dealers*)

Balfour Guthrie & Co., 67 Wall St., N. Y.
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Ridgefield, N. J.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding Co., 17 Battery Pl., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Stein, Hall & Co., 285 Madison Ave., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.
Zimmerman Alderson Carr Co., 25 Broadway, N. Y.

PALM OIL FATTY ACIDS (see Fatty Acids)

PAPER CANS (see Cans)

PAPER (Corrugated) (see Boxes, Corrugated)

PAPER CUPS

F. N. Burt Co., Batavia, N. Y.
Continental Can Co., 100 E. 42nd St., N. Y.
Individual Drinking Cup Co., Easton, Pa.
Sutherland Paper Co., Kalamazoo, Mich.

PAPER (Fancy Wrapping)

Aluminum Co of America, Gulf Bldg., Pittsburgh
A. M. Collins Mfg. 1518 Walnut St., Phila.
Louis DeJonge & Co., 155-6th Ave., N. Y.
C. J. Fox Co., 236 Ab: on St., Providence, R. I.
Fox Paper Co., Lockland, Cincinnati, O.
Hampden Glazed Peper & Card Co., Holyoke, Mass.
Henderson Lithographing Co., Cincinnati
Keller-Dorian Paper Co., 516 W. 34th St., N. Y.
New England Card & Paper Co., Springfield, Mass
Pictorial Package Co., Aurora, Ill.
Marquette Lithograph Co., 730 N. Franklin St., Chicago
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Potomac Lithograph Mfg. Co., Washington, D. C.
Richardson Co., Lockland, O.
Geo. Schmitt & Co., 253 Maujer St., Brooklyn
Louis Schulman Co., 465 Broome St., N. Y.
Strobridge Lithographing Co., Cincinnati
Sylvania Industrial Corp., 122 E. 42nd St., N. Y.
Tamm & Co., 61 E. 11th St., N. Y.
Transcello Paper Co., Milwaukee, Wisc.
U. S. Printing & Lithographing Co., Cincinnati, O.
Whiting-Peterson Co., Inc., 320-13th St., Philadelphia
Chas. W. Williams & Co., Inc., 309 Lafayette St., N. Y.

PAPER TOWELS and TISSUES

Brown Co., Portland, Me.
Hoberg Paper & Fibre Co., Green Bay, Wisc.
Scott Paper Co., Chester, Pa.
Straubel Paper Co., Green Bay, Wisc.
Towisaver, Inc., 2816 E. 11th St., Los Angeles
U. S. Envelope Co., Fulton, N. Y.
U. S. Envelope Co., Lititz Pa.
Victoria Paper Mills Co., Fulton, N. Y.

PARA BLOCKS (see Deodorizing Blocks)

PARADICHLORBENZENE

Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Naylee Chemical Co., 8001 Frankfort Ave., Phila.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Phillipp Bros., 70 Pine St., N. Y.
Rid-O-Moth Corp., South Kearny, N. J.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.

PARAFFIN

Atlantic Refining Co., 260 S. Broad St., Philadelphia
Borne-Scrysmer Co., Elizabeth, N. J.
E. A. Bromund Co., 258 Broadway, N. Y.
Cornelius Products Co., 386 4th Ave., N. Y.
Distributing & Trading Co., 444 Madison Ave., N. Y.
Gulf Refining Co., Pittsburgh
Industrial Raw Materials Corp., 52 Wall St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
International Wax Refining Corp., 4415 Third Ave.,
Bklyn.
Lenape Trading Co., 233 Broadway, N. Y.
George H. Lincks, 155 John St., N. Y.
Oil States Petroleum Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler Pa.

Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630-5th Ave., N. Y.
Smith & Nichols, 121 Maiden Lane, N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (N. J.), 26 Broadway, N. Y.
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
F. W. Steadman Co., 59 Pearl St., N. Y.
Strohmeyer & Arpe Co., 139 Franklin St., N. Y.
Texas Co., 135 E. 42nd St., N. Y.
Warwick Chemical Co., 580 5th Ave., N. Y.
Wax & Rosin Prods., 42 Broadway, N. Y.

PARAFFIN OILS

Atlantic Refining Co., 260 S. Broad St., Philadelphia
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Gulf Refining Co., Pittsburgh
Industrial Raw Materials Corp., 52 Wall St., N. Y.
International Wax Refining Corp., 4415 Third Ave.,
Bklyn.
Oil States Pet. Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler, Pa.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630-5th Ave., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Skelly Oil Co., Skelly Bldg., Kansas City, Mo.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
F. W. Steadman Co., 59 Pearl St., N. Y.

PARIS GREEN

Ansbacher-Siegle Corp., Rosebank, S. I.
Chemical Service Corp., 82 Beaver St., N. Y.
Chipman Chemical Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Reichhold Chemicals, Inc., 105 Bedford Ave., Brooklyn
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sherwin-Williams Co., Cleveland

PASTES (see Adhesives)

PATCHOULI OIL (see Essential Oils)

PEANUT OIL

(see also Brokers and Dealers)

Irving R. Boddy Co., 120 Wall St., N. Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Otte A. C. Hagen Corp., Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N. Y.
Leghorn Trading Co., 21 West St., N. Y.
Pacific Vegetable Oil Corp., 62 Townsend St., San Fran-
cisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Southern Cotton Oil Co., Produce Exchange, N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Welch, Holme & Clark, 439 West St., N. Y.

PEARL ASH (see Potassium Carbonate)

PENNYROYAL OIL (see Essential Oils)

PEPPERMINT OIL (see Essential Oils)



**PERFUME OILS FOR:
INSECTICIDES
FLY SPRAYS
THEATER SPRAYS
CLEANSERS
DETERGENTS
POLISHES
DISINFECTANTS
DEODORANT BLOCKS**

In a new product development and old product improvement, the *right* odor is an important sales factor.

If you're having difficulty in procuring the *right* odor for your needs—consult Givaudan! We have an extensive range of highest quality materials to meet your problems.

Long experience in the creation and compounding of perfumes and deodorants for special needs is available for your assistance.

All you need do is send us an unperfumed sample of your product and we will be glad to give recommendations to meet your formula requirements.

Givaudan-Delawanna, Inc.

330 WEST 42nd STREET, NEW YORK 18, N. Y.

Branches: Philadelphia • Los Angeles • Boston • Cincinnati • Detroit • Chicago • Seattle • Montreal • Toronto

PERCOLATORS (for solvent extraction)

Brighton Copper Works, 2161 Kindel Ave., Cincinnati
Arthur Colton Co., Detroit, Mich.
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati, O.
Pfaulder Co., 89 East Ave., Rochester, N. Y.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Machine Co., Philadelphia

PERFUME DISSEMINATORS

Ellis Davidson Co., 40 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Hysan Prods. Co., 932 W. 38th Place, Chicago
Robinson Clay Prod. Co., 101 Park Ave., N. Y.
Uncle Sam Chemical Co., 573 W. 131st St., St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago

PERFUMING COMPOUNDS

Albert Albek, Inc., 511 S. Fairfax, Los Angeles
Allondon, Inc., 55 Dey St., N. Y.
American British Chemical Supplies, 180 Madison Ave.,
N. Y.
van Ameringen-Haebler, Inc., 315 Fourth Ave., N. Y.
Aromatic Products, Inc., 15 E. 30th St., N. Y.
Bendix Chem. Corp., 420 Lexington Ave., N. Y.
Bush Aromatics, Inc., 136 Liberty St., N. Y.
Centflor Mfg. Co., 450 W. 31st St., N. Y.
Ph. Chaleyer, Inc., 160 E. 56th St., N. Y.
Antoine Chiris Co., Inc., 119 W. 57th St., N. Y.
Compagnie Duval, Division of S. B. Penick & Co., 50
Church St., N. Y.
Compagnie Parento, Croton-on-Hudson, N. Y.
Dodge & Olcott, Inc., 180 Varick St., N. Y.
Dow Chemical Co., Midland, Mich.
P. R. Dreyer Inc., 119 W. 19th St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Felton Chemical Co., 603 Johnson Ave., Brooklyn
Firmenich & Co., 250 W. 18th St., N. Y.
Fleuroma, Inc., 73 Sullivan St., N. Y.
Florasynth Laboratories, 1513 Olmstead Ave., Bronx
Benj. French, Inc., 160 Fifth Ave., N. Y.
Fritzsche Brothers, Inc., 76 Ninth Ave., N. Y.
General Drug Co., 644 Pacific St., Brooklyn
R. Gesell, Inc., 200 W. Houston St., N. Y.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Gunning & Gunning, 601 W. 26th St., N. Y.
Heine & Co., 54 Cliff St., N. Y.
D. W. Hutchinson & Co., 162 Front St., N. Y.
Hymes Bro. Co., 37 Howard St., N. Y.
Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
Lanoix Chem. Co., 549 W. Randolph St., Chicago
Lautier Fils, 321 Fifth Ave., N. Y.
Pierre Lemoine, 67 Cortland St., N. Y.
Geo. Lueders & Co., 427 Washington St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
A. Maschmeijer, Jr., Inc., 43 W. 18th St., N. Y.
Naugatuck Aromatics, 254 Fourth Ave., N. Y.
Neuman-Buslee & Wolfe, 224 W. Huron St., Chicago
New York Aromatics Co., 5 Beekman St., N. Y.
Norda Essential Oil & Chem. Co., 601 W. 26th St., N. Y.
Noville Essential Oil Co., 157 Cedar St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Perry Bros., Inc., 220 Flushing Ave., Brooklyn
Polak's Frutal Wks., Inc., 36-14-35th St., L. I. City
Polak & Schwarz, Inc., 667 Washington St., N. Y.
Henri Robert, Inc., 39 W. 60th St., N. Y.
Edward Remus & Co., 11 W. 42nd St., N. Y.
Roure-Dupont, Inc., 366 Madison Ave., N. Y.
H. C. Ryland, Inc., 161 Water St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Edwin Seebach Co., 912 Broadway, N. Y.
Seeley & Co., 136 Liberty St., N. Y.
C. A. Seguin, 2141 W. North, Chicago
Wm. G. Sibbach & Co., 201 2nd Ave., Maywood, Ill.
Sparhawk Co., Sparkill, N. Y.
Synfleur Scientific Labs., Monticello, N. Y.

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for ROACHES and RATS

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Tombarel Products Corp., 12 E. 22nd St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.
Van Dyk & Co., Belleville, N. J.
Albert Verley, Inc., 440 W. Superior St., Chicago

PETIT GRAIN OIL (see Essential Oils)

PETROLATUM (Petroleum Jelly)

Atlantic Refining Co., 260 S. Broad St., Philadelphia
Borne-Scrumser & Co., Elizabeth, N. J.
Chesebrough Mfg. Co., 17 State St., N. Y.
Industrial Raw Materials Corp., 52 Wall St., N. Y.
Malone Oil Co., 2199 E. 18th St., Cleveland
Pennsylvania Refining Co., Butler, Pa.
Oil States Pet. Co., 233 Broadway, N. Y.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Shell Oil Co., 50 W. 50th St., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630 Fifth Ave., N. Y.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (N. J.), 26 Broadway, N. Y.
F. W. Steadman Co., 59 Pearl St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

PETROLEUM INSECTICIDE BASE OILS (Base for Household, Cattle and other Insect Oil Sprays, etc.)

American Mineral Spirits Co., 330 S. Mich., Chicago
Anderson-Prichard Oil Corp., Oklahoma City, Okla.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Beacon Oil Co., Everett, Mass.
Borne Scrumser Co., 632 S. Front St., Elizabeth, N. J.
Commerce Petroleum Co., 2923 Lock St., Chicago
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Empire Oil Co., Oil City, Pa.
Gulf Refining Co., Frick Annex, Pittsburgh
Oil Service Co., Warren, Pa.
Oil States Pet. Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler, Pa.
Pennzoil Co., Oil City, Pa.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Shell Oil Co., 50 W. 50th St., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630 Fifth Ave., N. Y.
Skelly Oil Co., Skelly Bldg., Kansas City, Mo.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (N. J.), 26 Broadway, N. Y.
Sun Oil Co., 1608 Walnut St., Philadelphia
Texas Co., 135 E. 42nd St., N. Y.
Tidewater Oil Co., 11 Broadway, N. Y.

PETROLEUM INSECTICIDE BASE OILS, Deodorized

Anderson-Prichard Oil Corp., Oklahoma City, Okla.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Commerce Petroleum Co., 2923 Lock St., Chicago
Pennsylvania Refining Co., Butler, Pa.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Shell Oil Co., 50 W. 50th St., N. Y.
Sherwood Petroleum Co., Englewood, N. J.
Sinclair Refining Co., 630-5th Ave., New York
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago

PETROLEUM ETHER (see Ether)

PETROLEUM SULFONATES (see Naphthenic Acids)

PHENOL (Carbolic Acid)

Barrett Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Dow Chemical Co., Midland, Mich.
Heyden Chemical Corp., 393 7th Ave., N. Y.
Innis, Speden & Co., 117 Liberty St., N. Y.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Reilly Tar & Chem. Corp., Indianapolis

PHENOL-COEFFICIENT DETERMINATIONS (see Consultants)

PHENYL ACETIC ALDEHYDE (see Aromatic Chemicals)

PHENYL ETHYL ALCOHOL (see Aromatic Chemicals)

pH INDICATORS

Lamotte Chemical Prods., Dept. R., Towson, Baltimore
National Technical Labs., 820 Mission St., South Pasadena, Calif.
Pfaltz & Bauer, 350-5th Ave., N. Y.
W. A. Taylor Co., 7300 York Rd., Baltimore

PHOSPHORUS PASTE

John Opitz, 50-14—39th St., Long Island City, N. Y.
Sennewald Drug Co., 2723 Chouteau Ave., St. Louis

PINE OIL

American Turp. & Tar Co., 810 S. Broad St., New Orleans
E. W. Colledge, General Sales Agent, Inc., P. O. Box 389, Jacksonville, Fla.
Continental Turp. & Rosin Corp., Laurel, Miss.
Crosby Chemicals, Inc., De Ridder, La.

Dixie Pine Prods. Co., Hattiesburg, Miss.
Glidden Co., Naval Stores Div., Jacksonville, Fla.
Gulf Naval Stores Supply Co., Whitney Bldg., New Orleans
Hercules Powder Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
National Turp. Prods. Co., Gulf Point, Fla.
Newport Industries, Inc., 230 Park Ave., N. Y.
Phoenix Naval Stores Co., Gulfport, Miss.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Southern Pine Chem. Co., Box 389, Jacksonville
Taylor, Lowenstein & Co., Mobile, Ala.
Welch, Holme & Clark Co., 439 West St., N. Y.

PINE OIL DISINFECTANTS (see Disinfectants, Pine Oil)

PINE NEEDLE OIL (see Essential Oils)

PINE SCRUB SOAPS (see also Floor Scrub Soaps)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st St., Chicago
Baird & McGuire, Inc., Holbrook, Mass.
Baum's Castorine Co., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 138th St., New York
Buckingham Wax Corp., Van Dam St. & Borden Ave., L. I. City, N. Y.
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
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Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th & Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Products Co., 932 W. 38th Place, Chicago
Klix Chem. Co., 2460 Third St., San Francisco
Kranich Soap Co., 60 Richards St., Brooklyn
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Midland Labs., Dubuque, Ia.
Morgan Chemical Co., Harrisburg, Pa.
Nopco Chem. Co., Harrison, N. J.
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Puritan Chem. Co., 209 Peters St., S. W., Atlanta
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Rex-Cleanwall Corp., Brazil, Ind.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Shawmut Specialty Co., 91 Bickford St., Boston
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Solshine Mfg. Co., 412-2nd St., Fall River, Mass.
John T. Stanley Co., Inc., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Works, 3 Winter St., Worcester, Mass.
Tesco Chem. Co., P. O. Box 4748, Atlanta
Thompson & Hayward Chem. Co., Kansas City, Mo.
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 428 Hanover St., Baltimore
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Universal Chem. Corp., 35 E. Market St., Akron, O.
James Varley & Sons, 1200 Switzer Ave., St. Louis
G. H. Wood & Co., Toronto, Canada
Chas. W. Young & Co., 1247 N. 26th St., Phila.

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Gulf Naval Stores Supply Co., Whitney Bldg., New Orleans
Hercules Powder Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Southern Pine Chem. Co., Box 389, Jacksonville
Taylor, Lowenstein & Co., Mobile, Ala.

PIPE COILS

Alloy Prods. Corp., 221 Madison St., Waukesha, Wis.
Brighton Copper Works, 2150 Colerain Ave., Cincinnati
Harrisburg Steel Corp., Harrisburg, Pa.
Hartford Tube Products Co., Hartford, Conn.
Houchin Machinery Co., Hawthorne, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., 4100 N. 5th St., Phila.
Pittsburgh Pipe Coil & Bending Co., Etna, Pa.
Rempe Co., 340 N. Sacramento Blvd., Chicago
Whitlock Coil Pipe Co., Hartford, Conn.

PLANT SPRAYS (see Agricultural Insecticides)

PLATES, STEEL, CORROSION-RESISTANT (see Steel, Corrosion-Resistant)

PLODDERS (see Soap Machinery)

POISONED SEEDS (Poison Grain)

Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore, Md.
Hysan Products Co., 932 W. 38th Place, Chicago
O. E. Linek Co., 51 James St., Montclair, N. J.
Sennewald Drug Co., 2723 Chouteau Ave., St. Louis
W. R. Sweeney, Salisbury, Mo.
York Chemical Co., 28 Dean St., Bklyn.

POLISH BASES (see Petroleum Bases)

POLISHES

Ampion Corp., 4-88-47th Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armiger Chem. Co., 2155 W. Hubbard St., Chicago
Banner Chemical Prod. Corp., 329 Mulberry St., Newark N. J.
Baum's Castorine Co., 200 Mathew St., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 138th St., New York
Buckingham Wax Corp., Borden Ave. and Van Dam St., L. I. City, N. Y.
Candy & Co., 2515 W. 35th St., Chicago
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Creco Co., Creco Bldg., L. I. City, N. Y.
Crowell Chemical Co., East Rutherford, N. J.
Davies Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Empire Chem. Prods. Co., 12 Longworth Ave., Newark, N. J.
Federal Varnish Division, S. Ashland Ave. at 29th St., Chicago
Fox Lake Wax Co., Fox Lake, Ill.
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaskill Products, 9 S. Letitia St., Phila.
Golden Star Polish Mfg. Co., 2901 E. 13th St., Kansas City, Mo.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th & Seeley Ave., Blue Island, Ill.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hull Co., 305 Washington St., Brooklyn
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
International Metal Polish Co., Indianapolis
Klix Chem. Co., 2460 Third St., San Francisco
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
J. S. Lawston Co., 8-Henshaw St., N. Y.
Lewis Soap & Chem. Co., Oakland, Calif.
M & H Laboratories, 2703-5 Archer Ave., Chicago
Manhattan Kreole Prods., 172 N. 10th St., Brooklyn
Masury-Young Co., 76 Roland St., Boston
Midland Labs., Dubuque, Ia.
Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
Nopco Chem. Co., Harrison, N. J.
North Coast Soap & Chem. Wks., Seattle, Wash.
Oil Specialties & Refining Co., 18 Bridge St., Bklyn.
Perrow Chemical Co., Hurt, Va.
Pioneer Mfg. Co., 3053 E. 87th St., Cleveland
Puritan Chem. Co., 209 Peters St., S. W., Atlanta
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Sherolite Products, 1775 Bdway., N. Y.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Slick-Shine Co., 207 Astor St., Newark, N. J.
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
H. F. Staples Co., Medford, Mass.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Works, 3 Winter St., Worcester, Mass.
Tesco Chem. Co., P. O. Box 4748, Atlanta
Transmotive Labs., 2550 S. Mich. Ave., Chicago
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Twin City Shellac Co., 340 Flushing Ave., Bklyn.
Twi-Laq Chemical Co., 25 No. Portland Ave., Brooklyn
Uncle Sam Chemical Co., 573 W. 131st St., St., N. Y. C.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Universal Chem. Corp., 35 E. Market St., Akron, O.
Victory Chem. Co., 148 Fairmont Ave., Phila.
Victory Soap & Chemical Co., 252—3rd St., Brooklyn,
N. Y.
T. F. Washburn Co., 2244 Elston Ave., Chicago
Wilco Co., 6800 McKinley Ave., Los Angeles
Windsor Wax Co., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Canada

POTASH CAUSTIC

(see also Dealers)

American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N. Y.

Diamond Alkali Co., 536 Smithfield St., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington
Innis, Speiden & Co., 117 Liberty St., N. Y.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 10 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.

POTASH SOAPS (Soft Soaps, Liquid Soaps, Shampoo Soaps, etc.)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 4-88—7th Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
Arrow Laboratories, 236 W. North Ave., Chicago
Banner Chemical Products Corp., 60 Elm St., Newark,
N. J.
Bauma Castorine Co., 200 Mathew St., Rome, N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 109 Ave. L, Newark, N. J.
Buckingham Wax Co., 51-03 Van Dam St., L. I. City, N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chemical Service Co., Baltimore
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Labs., 22-19 37th Ave., L. I. City, N. Y.
James Counts Soap Co., 2nd & Washington Aves.,
St. Louis, Mo.
Creco Co., Creco Bldg., L. I. City, N. Y.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Davies Young Soap Co., Dayton, Ohio
E. F. Drew & Co., 15 E. 26th St., New York
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Essential Chemicals, 3286 N. 33rd St., Milwaukee.
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VEGETABLE OIL SOAPS

Soft Potash, 40% Anhydrous
Hard Potash, 65% Anhydrous
U. S. P. XIIth Green Soap

LIQUID SCRUBBING SOAPS

Pine Scrubbing Soap 22% Anhydrous
Sassafrass Scrubbing Soap 20% Anhydrous
Odorless Scrubbing Soap 20% Anhydrous

LIQUID SOAP SHAMPOOS

COCOANUT OIL SOAP SHAMPOO
(Castor Blend)
40%-30%
Concentrated

LIQUID CASTILE SOAP SHAMPOO

30% Standard
Concentration

ALL PERFUMES CHARGED EXTRA

Bouquet and tar
Lemon, mint and pine needle
*Kranich Service assures attention to requirements,
careful handling and prompt shipment of orders.*

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Terms: 1% 10 days; Net 30 Days.
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*ALL SOAPS MANUFACTURED
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Genseke Bros., W. 48th Pl. & Whipple St., Chicago, Ill.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th & Seeley Ave., Blue Island,
Ill.
Harley Soap Co., Pierce & Orthodox Sta., Philadelphia
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, Ohio
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
J. Chemical Works, 602 W. 37th St., N. Y.
Jansen Soap & Chemical Co., 324 Leavenworth St.,
San Francisco, Cal.
Klix Chem. Co., 2460 Third St., San Francisco
Kranich Soap Co., 54 Richards St., Brooklyn
Lanair Chem. Corp., 238 W. North Ave., Chicago
Laurel Soap Mfg. Co., Tioga & Almond Sts., Philadelphia
Long Island Soap Co., Meeker Ave. &
Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
M. & H. Laboratories, 2705 Archer Ave., Chicago
Masury-Young Co., 76 Roland St., Boston
Midland Labs., Dubuque, Ia.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Nopco Chem. Co., Harrison, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
N. Y. Soap Co., 258 Third St., Brooklyn
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati, O.
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
R. G. A. Laboratories, 145 W. 45th St., N. Y.
Riverside Chem. Co., N. Tonawanda, N. Y.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Royal Soap & Chem. Co., 511 S. Central Ave.,
Los Angeles
Rubon Woodfinishing & Prods. Co., 500 W. 7th St.,
Kansas City, Mo.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St.,
St. Louis, Mo.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tech Soap Co., 125 W. 46th Place, Chicago, 9
Teaco Chem Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Thompson-Hayward Chemical Co., Kansas City, Mo.
Tremco Mfg. Co., 393 East 131st St., Cleveland
Trio Chem. Wks., 341 Scholes St., Bklyn.
Uncle Sam Chem. Co., 573 W. 131st St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
Victory Soap & Chemical Co., 252-3rd St., Brooklyn,
N. Y.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
G. H. Wood & Co., Toronto, Canada
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

POTASSIUM CARBONATE

American Cyanamid & Chemicals Corp.,
30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Croton Chem. Corp., 114 Liberty St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co.,
230 Park Ave., N. Y.
Innis, Speiden & Co., 127 Liberty St., N. Y.
Harshaw Chem. Co., Cleveland
Merck & Co., Rahway, N. J.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.

Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

POTASSIUM PERSULFATE

American Cyanamid & Chemicals Corp.,
30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Buffalo Elec. Chem. Co., River Rd., Buffalo, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Merck & Co., Rahway, N. J.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
Sergeant Chem. Co., 7 Dey St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

POTASSIUM SILICATE

E. I. du Pont de Nemours & Co., Wilmington, Del.
Philadelphia Quartz Co., 125 S. 3rd St., Philadelphia
Welch, Holme & Clark Co., 439 West St., N. Y.

POURING SPOUTS (see Can Spouts, Closures)

POWDERED SOAP (see Soap, Powdered) Do not confuse
with Soap Powders

PREMIUMS

Anchor Hocking Glass Corp., Lancaster, O. (glassware)
Goody Mfg. Co., 15 E. 22nd St., N. Y. (novelties)
Hazel-Atlas Co., Wheeling, W. Va. (glassware)
Holgate Co., Kane, Pa. (woodenware toys)
Keystone Processed Prods. Co., 683 Broadway, N. Y.

PRESSES (Automatic Soap)

Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
R. A. Jones & Co., Cincinnati, O.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago (Used)
A. H. Ross & Co., P.O. Box 998, Dayton, O.
Stein Equipment Co., 90 West St., N. Y. (Used)

PRESSES (Foot and Hand Lever for Soap and Para Cakes)

Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Mach. Co., Philadelphia, Pa.

PRIVATE FORMULAS (see under individual products)

PRIVATE LABEL PACKAGING, FILLING (see packaging
for the trade)

PUMICE

California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
Pacific Coast Pumice Co., Bishop, Calif.
Pumice Corp. of America, Grants, N. M.
Wm. P. Rogers, 44 Woodman St., Lynn, Mass.
Tammis Silica Co., 228 N. La Salle St., Chicago
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.

PUMPS

Aldrich Pump Co., 1 Pine St., Allentown, Pa.
Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Also Engineering Corp., 103 Green St., Milldale, Conn.

PUMPS (Contd.)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
American Steam Pump Co., Battle Creek, Mich.
Beach-Russ Co., 50 Church St., N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
S. F. Bowser & Co., Ft. Wayne, Ind.
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
M. T. Davidson Co., 164 Nassau St., N. Y.
Eastern Engineering Co., 46 Fox St., New Haven, Conn.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Foster Pumps, Inc., 51 Washington St., Brooklyn, N. Y.
Goulds Pumps, Inc., Seneca Falls N. Y.
Joshua Hendy Iron Wks., Pomona, Calif.
Houchein Machinery Co., Hawthorne, N. J.
Ingersoll-Rand Co., 11 Broadway, N. Y.
Jabsco Pump Co., 2031 N. Lincoln St., Burbank, Calif.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Lobee Pump & Machine Co., Buffalo, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Oberdorfer Foundries, Inc., 5100 Thompson Rd., Syracuse, N. Y.
P. H. & F. M. Roots Co., Connersville, Ind.
H. K. Porter Co., Oliver Bldg., Pittsburgh
Satisfaction Supply Co., 508 W. Broadway, N. Y.
Scientific Filter Co., 12 Franklin Square, N. Y.
T. Shriver & Co., Harrison, N. J.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Machine Co., Philadelphia, Pa.
Taber Pump Co., 278 Elm St., Buffalo, N. Y.
Viking Pump Co., Cedar Falls, Iowa
Worthington Pump & Machinery Co., 2 Park Ave., N. Y.

PYRETHRUM FLOWERS AND POWDER

Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Derris, Inc., 79 Wall St., N. Y.
Greene Trading Co., 70 Pine St., N. Y. (agents for foreign sellers)
Hammond Paint & Chemical Co., Beacon, N. Y.
J. L. Hopkins & Co., 220 Broadway, N. Y.
McCormick & Co., Baltimore, Md.
McLaughlin, Gormley King Co., 1715 Fifth St., S. E., Minneapolis, Minn.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

PYRETHRUM EXTRACT

Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Associated Chemists, Inc., 1906 N. Halsted St., Chicago
Chemical Sales Corp., Pittsburgh 19
Hammond Paint & Chemical Co., Beacon, N. Y.
J. L. Hopkins & Co., 220 Broadway, N. Y.
McCormick & Co., Baltimore
McLaughlin, Gormley King Co., 1715 Fifth St., S. E., Minneapolis
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

PYROPHYLLITE

Attapulgus Clay Co., 210 W. Washington Sq., Phila.
Carolina Pyrophyllite Co., 10 E. 40th St., N. Y.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
Dicalite Co., 120 Wall St., N. Y.
Kennedy Minerals Co., 2550 E. Olympic Blvd., Los Angeles, Cal.
Pioneer Pyrophyllite Producers, P.O. Box 686, Chulavista, Cal.
Tamms Silica Co., 229 N. LaSalle St., Chicago
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Whittaker, Clark & Daniels, 260 W. Bway, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

QUATERNARY AMMONIUM COMPOUNDS

Alrose Chem. Co., Box 1294, Providence, R. I.
J. T. Baker Chemical Co., Phillipsburg, N. J.
Carlstadt Chem. Co., Carlstadt, N. J.
E. I. du Pont de Nemours & Co., Wilmington
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
James Good Co., Susquehanna Ave. & Martha St., Phila.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Onyx Oil & Chem. Co., Jersey City, N. J.
Penna. Salt Mfg. Co., Widener Bldg., Phila.
Rhodes Chemical Corp., 3227 Frankford Ave., Phila.
Retardex Co., 1 Hanson Pl., Brooklyn
Richards Chem. Co., Jersey City, N. J.
Rohm & Haas, 222 W. Washington Sq., Phila.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Universal Chlorinator Co., 3418 W. Pico Blvd., Los Angeles
James Varley & Sons, 1200 Switzer Ave., St. Louis
Winthrop Chem. Co., 1450 Broadway, N. Y.
G. H. Wood & Co., Toronto, Ont., Canada

QUATERNARY AMMONIUM DISINFECTANTS (See Disinfectants, Quaternary Ammonium)

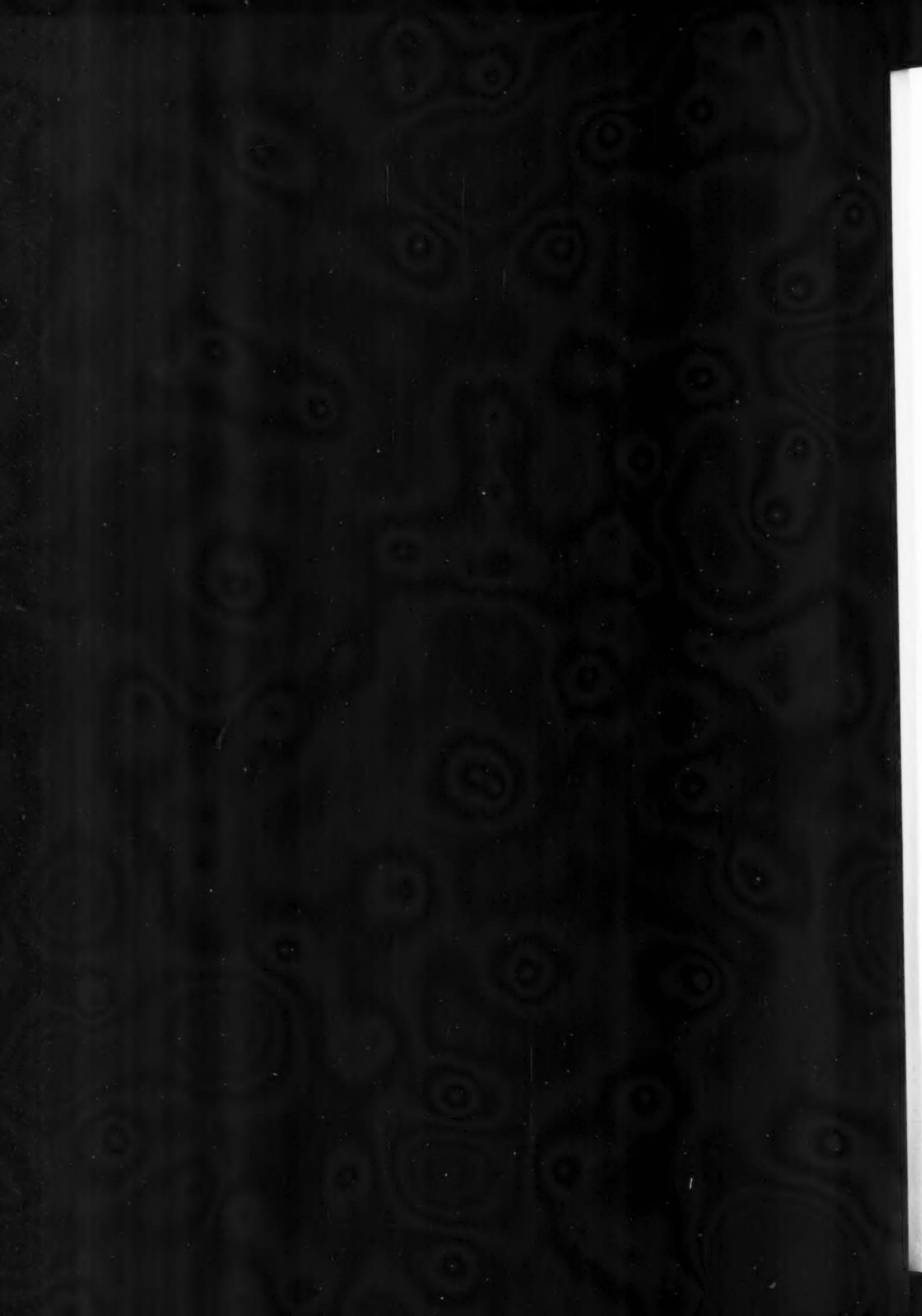
RAPESEED OIL

Balfour, Guthrie & Co., 67 Wall St., N. Y.
Irving R. Boddy & Co., 120 Wall St., N. Y.
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Pl., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Smith-Weihman Co., 15 Moore St., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.

RAT EXTERMINATING PRODUCTS

An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Barton Chem. Co., 3907 S. Langley Ave., Chicago
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chem. Service Co. of Balt., Howard & West Sts., Balt.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Corn King Co., Cedar Rapids, Ia.
E. I. du Pont de Nemours & Co., Wilmington
Eagle Soap Corp., Huntingdon, Ind.
Elkay Products Co., 323 W. 16th St., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olen, Inc., 140 Liberty St., N. Y.
Foote Mineral Co., 1609 Summer St., Philadelphia
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Products Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fountain St., Phila.
Innis, Speden & Co., 117 Liberty St., N. Y.
Ketoid Chem. Co., 339 S. Van Deventer, St. Louis
Lethelin Products Co., Mt. Vernon, N. Y.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
O. E. Linck Co., 51 James St., Montclair, N. J.
Maywood Pest Exterminators, Maywood, Ill.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
John Opitz, Inc., 50-14 39th St., Long Island City, N. Y.
S. P. Penick & Co., 50 Church St., N. Y. C.
Per-Mo Products Co., 3604 Woodland Ave., Kansas City, Mo.
Pest Control Supply Co., 210 N. Western Ave., Los Angeles
Pfaltz & Bauer, Inc., 350 Fifth Ave., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Ratin Laboratories, Inc., 112 Broad St., N. Y.
Sennewald Drug Co., 2723 Chouteau Ave., St. Louis
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Sur-Rid Prods. Co., 455 Paul Brown Bldg., St. Louis
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Victory Chem. Co., 148 Fairmount Ave., Philadelphia
York Chemical Co., 23 Dean St., Brooklyn.

RAT POISONS (see Squills, Phosphorous Paste, Thallium Sulfate, etc.)

RED OIL (Oleic Acid)

(see also Brokers and Dealers)

American British Chem. Supplies, Inc.,
180 Madison Ave., N. Y.
American Cyanamid & Chemicals Corp.,
30 Rockefeller Plaza, N. Y.
Armour Chem. Div., 1355 W. 31st St., Chicago
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Works, 41 E. 42nd St., N. Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
Griffin Chem. Co., 1000 16th St., San Francisco
A. Gross & Co., 295 Madison Ave., N. Y.
Otto A. C. Hagen, Public Ledger Bldg., Philadelphia
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Procter & Gamble Co., Cincinnati
Sergeant Chem. Co., 7 Dey St., N. Y.
Theobald Industries, Kearny, N. J.
Arthur C. Trask Co., 4108 S. La Salle St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
M. Werk Co., St. Bernard, Cincinnati
Wilson-Martin Co., Snyder Ave. & Swanson St.,
Philadelphia
Woburn Chem. Corp., Harrison, N. J.

REFINING EQUIPMENT (Glycerine)

E. B. Badger Co., 25 Pitts St., Boston
Buffalo Foundry & Machine Co., Buffalo, N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 150 Broadway, N. Y.
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago (Used)
Ernest Scott & Co., Fall River, Mass.
Struthers-Wells Co., Warren, Pa.
Walter E. Simmons Co., Boston
Stein Equipment Co., 90 West St., N. Y. (Used)
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

REFRIGERATING EQUIPMENT

H. Loeb & Son, 4600 Lancaster Ave., Philadelphia
York Ice Machine Co., York, Pa.

REMELTERS

Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Patterson Foundry & Mach. Co., East Liverpool, O.
Patterson-Kelley Co., East Stroudsburg, Pa.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

RESINS, SYNTHETIC

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Bakelite Corp., 300 Madison Ave., N. Y.
Barrett Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Dures Plastics, Inc., North Tonawanda, N. Y.
Hercules Powder Co., Wilmington, Del.
General Electric Co., Bridgeport, Conn.

Krumbhaar Chemicals, Inc., South Kearney, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., Louis
Neville Co., Pittsburgh, Pa.
Paramet Div., Libbey-Owens-Ford Glass Co., Toledo
Reilly Tar & Chem. Corp., Indianapolis
Reichhold Chemicals, Inc., Detroit
Resinous Prods. & Chem. Corp., 222 W. Washington Sq.,
Philadelphia
Velsicol Corp., 330 E. Grand Ave., Chicago
Warwick Chemical Co., West Warwick, R. I.
U. S. Industrial Chemicals, Inc., Lincoln Bldg., N. Y.

RESPIRATORS

Davis Emergency Equipment Co., 55 Vandam Ave.,
New York
Electric Sprayit Co., Sheboygan, Wis.
Mine Safety Appliances Co., Braddock and Thomas Sts.,
Pittsburgh

RHODINOL (see Aromatic Chemicals)

ROACH PASTE

John Opitz, Inc., 50-14 39th St., L. I. City, N. Y.
Sennewald Drug Co., 2723 Chouteau Ave., St. Louis

ROACH POWDERS (see Household Insecticides, Powder)

ROSE OIL (see Essential Oils)

ROSEMARY OIL (see Essential Oils)

ROSIN

Antwerp Naval Stores Co., Savannah, Ga.
E. W. Colledge, General Sales Agent, P. O. Box 389,
Jacksonville, Fla.
Continental Turp. & Rosin Corp., Laurel, Miss.
Crosby Chemicals, Inc., De Ridder, La.
Dixie Pine Prods. Co., Hattiesburg, Miss. (wood)
Georgia Rosin Prods. Co., Brunswick, Ga.
Glidden Co., Naval Stores Div.,
P. O. Box 380, Jacksonville, Fla.
Hercules Powder Co., Wilmington, Del. (wood)
Industrial Chem. Sales Div., West Va., Pulp & Paper Co.,
230 Park Ave., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Phoenix Naval Stores Co., Gulfport, Miss. (wood)
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Southern Pine Chem. Co., Box 389, Jacksonville
Taylor, Lowenstein & Co., Mobile, Ala.
Wax & Rosin Prods., 42 Broadway, N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

ROSIN SOAPS (Saponified Rosins)

Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
James Good, Inc., 2116 E. Susquehanna Ave., Philadelphia
Haskins Bros. & Co., Omaha
Hercules Powder Co., Wilmington
Nopco Chem. Co., Harrison, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St.,
Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
G. H. Wood & Co., Toronto, Ont., Canada
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

ROTIENONE FORMULATIONS (see also Derris)

Agicide Laboratories, 1717 Taylor Ave., Racine, Wis.
Associated Chemists, Inc., 1906 N. Halsted, Chicago
California Spray-Chemical Corp., Lucas & Ortho Way,
Richmond, Calif.
Chipman Chem. Co., Bound Brook, N. J.
Derris, Inc., 79 Wall St., N. Y.
Greene Trading Co., 70 Pine St., N. Y. (agents for
foreign sellers)

ROtenone FORMULATIONS (Contd.)

Hammond Paint & Chem. Co., Beacon, N. Y.
J. L. Hopkins & Co., 220 Broadway, N. Y.
Jooster & Janssen, 132 Front St., N. Y.
Ketoid Chem. Co., 549 W. Washington, Chicago
Lenape Trading Co., 233 Broadway, N. Y.
McCormick & Co., Baltimore, Md.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
U. S. Indus. Chemicals, Inc., 60 E. 42nd St., N. Y.
Whitmire Research Corp., 339 Vandeventer, St. Louis

ROTENONE FORMULATIONS (Contd.)

RUBBER STOPPERS (see Laboratory Apparatus)

RUG and UPHOLSTERY CLEANERS

Alrose Chem. Co., Box 1294, Providence, R. I.
Ampion Corp., 488-47th Ave., L. I. City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Bri-Test Prods. Corp., 845 E. 138th St., New York
Buckingham Wax Corp., Van Dam St. & Borden Ave.,
L. I. City
Candy & Co., 2515 W. 35th St., Chicago
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City,
Mo.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Blue Island, Ill.
Higley Chem. Co., Dubuque, Iowa
Hild Floor Machine Co., 1313 W. Randolph St., Chicago
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman Co., Providence, R. I.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
Kwik Products Co., 451 W. 28th St., N. Y.
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
M & H Laboratories, 2705 Archer Ave., Chicago
M. Michel & Co., 90 Broad St., N. Y.
Midland Labs., Dubuque, Ia.
Multi-Clean Prods., Inc., 2277 Ford P'kway, St. Paul,
Minn.
Nopco Chem. Co., Harrison, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Per-Mo Products Co., 3604-B Woodland Ave., Kansas City
Phila. Quartz Co., 125 S. 3rd St., Philadelphia
Rx-Cleanwall Corp., Brazil, Ind.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Tech Soap Co., 125 W. 46th Pl., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Works, 3 Winter St., Worcester, Mass.
Thompson-Hayward Chem. Co., 2915 S. W. Blvd.,
Kansas City, Mo.
Transmotive Labs., 2550 S. Michigan Ave., Chicago
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
Universal Chem Corp., 35 E. Market St., Akron, O.
James Varley & Sons, 1200 Switzer Ave., St. Louis
Washine-National Sands, Inc., 37-02 Northern Blvd.,
Long Island City

Wilco Co., 6800 McKinley Ave., Los Angeles
G. H. Wood & Co., Toronto, Ont., Canada
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

SADDLE SOAP

Armour & Co., 1355 W. 31st St., Chicago
Asco Chemical Co., 641 Lexington Ave., Brooklyn
Baum's Castorine Co., Rome, N. Y.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Lorenz Chem. Co., 135 N. 32nd Ave., Omaha
Nopco Chem. Co., Harrison, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Rome Soap Mfg. Co., Rome, N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Windsor Wax Co., 611 Newark St., Hoboken, N. J.
G. H. Wood & Co., Toronto, Ont., Canada

SAL AMMONIAC (see Ammonium Chloride)

SAL SODA

(see also Dealers)

American Cyanamid & Chemicals Corp.,
30 Rockefeller Plaza, N. Y.
Church & Dwight Co., 70 Pine St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington, Del.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chemical Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Matheson Chemical Corp., 60 E. 42nd St., N. Y.
Mechling Bros. Chemical Co., Camden, N. J.
Pittsburgh Plate Glass Co., Columbia Chem. Div.,
Grant Bldg., Pittsburgh
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Joseph Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

SALT (Common Salt)

(see also Dealers)

Diamond Alkali Co., 533 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
Hooker Electrochemical Co., Niagara Falls, N. Y.
International Salt Co., 475 Fifth Ave., N. Y.
Jefferson Salt & Mining Co., Louisville, Ky.
LeRoy Salt Co., LeRoy, N. Y.
Michigan Chem. Corp., St. Louis, Mich.
Myles Salt Co., 1007 Camp St., New Orleans, La.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div.,
Grant Bldg., Pittsburgh
Pomeroy Salt Co., Pomeroy, Ohio
Remington Salt Co., Ithaca, N. Y.
Saginaw Salt Prods. Co., Saginaw, Mich.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

SALT WATER SOAP (Marine Soaps)

Antara Prods. Div., Gen. Aniline & Film Corp., 444
Madison Ave., N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago

SALT WATER SOAP (Contd.)

Armour Soap Wks., 1355 W. 31st St., Chicago
Buck-Jack Co., 3056 Federal St., Baltimore
Carlstadt Chem. Co., Carlstadt, N. J.
J. Eavenson & Sons, Camden, N. J.
Hewitt Soap Co., Dayton, O.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Kamen Soap Prods., Woolworth Bldg., N. Y.
Los Angeles Soap Co., Los Angeles
MacKenzie Labs., Front & Yarnall Sts., Chester, Pa.
Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Nopeco Chem. Co., Harrison, N. J.
Newell-Gutradt Co., San Francisco
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati, O.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
M. Werk Co., Cincinnati

SAMPLE CASES

Arrow Mfg. Co., 15th & Hudson Sts., Hoboken, N. J.
Knickerbocker Case Co., 2311 N. Crawford Ave., Chicago

SANDALWOOD OIL (see Essential Oils)

SAPONIN (Ext. Soap Bark)

Dodge & Olcott, Inc., 180 Varick St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Enco Chem. Corp., 441 Lexington Ave., N. Y.
Florasynth Labs., 1513 Ohmstead Ave., Bronx, N. Y.
Fritzache Brothers, Inc., 76 Ninth Ave., N. Y.
Hoffman-La Roche, Inc., Nutley, N. J.
Interstate Color Co., 5 Beekman St., N. Y.
Geo. Lueders & Co., 427 Washington St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Merck & Co., Rahway, N. J.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.

SASSAFRAS, Artificial (see Aromatic Chemicals)

SCOURING POWDERS

American Soap Powder Wks., Inc., 98 Van Dyke St., Brooklyn
American Soap & Washoline Co., Cohoes, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Baum's Castorine Co., 200 Mathew St., Rome, N. Y.
Buck-Jack Co., 3056 Federal St., Baltimore
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Hercules Powder Co., Wilmington, Del.
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods., 932 W. 38th Place, Chicago
Imperial Products Co., 1600 Fontain St., Phila.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Kamen Soap Prods. Co., Woolworth Bldg., N. Y.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Los Angeles Soap Co., 617 E. First St., Los Angeles
MacKenzie Labs., Front & Yarnall Sts., Chester, Pa.
Midland Labs., Dubuque, Ia.
National Milling & Chem. Co., Manayunk, Philadelphia
Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Pacific Chem. Co., 1412 N. Main St., Los Angeles
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Philadelphia

Pittsburgh Plate Glass Co., Columbia Chemical Div.,

Grant Bldg., Pittsburgh
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., 209 Peters St., S.W., Atlanta
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Stevens Soap Corp., 200 Sullivan St., Brooklyn
Swift & Co., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., Houston, Texas
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Victory Soap & Chem. Co., 252 Third St., Bklyn.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Warwick Chemical Co., West Warwick, R. I.
G. H. Wood & Co., Toronto, Ont., Canada
Allen B. Wriley Co., 6801 W. 65th St., Chicago
Wyandotte Chem. Corp., Wyandotte, Mich.
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

SCOURING SOAPS (Bars)

American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Works, 1355 W. 31st St., Chicago
Baum's Castorine Co., Rome, N. Y.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Cudahy Packing Co., 221 N. La Salle St., Chicago
James Good, Inc., 2116 E. Susquehanna Ave., Philadelphia
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles
National Soap Co., P. O. Box 1631, Tacoma, Wash.
Peck's Products Co., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati, O.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wriley Co., 6801 W. 65th St., Chicago
Chas. W. Young & Co. 1247 N 26th St., Phila.

SCREENS (Screening and Sifting Equipment)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland, O.
B. F. Gump Co., 412 S. Clinton St., Chicago
J. H. Day Co., Cincinnati
J. M. Lehmann Co., Lyndhurst, N. J.
Ludlow-Sayer Wire Co., St. Louis, Mo.
Orville Simpson Co., 1230 Knowlton St., Cincinnati
Simplicity Engineering Co., Durand, Mich.
Sprout, Waldron & Co., Muncey, Pa.
Stedman's Fdy. & Machine Works, Aurora, Ind.
Stein Equipment Co., 90 West St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.
W. S. Taylor Co., Cleveland, O.
Wickwire Spencer Steel Co., 500—5th Ave., N. Y.

SCRUBBING MACHINES (see Floor Machines)

SCRUBBING SOAPS, LIQUID (see Floor Scrub Soaps)

SEALING MACHINERY (Bags)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
B. F. Gump Co., 412 S. Clinton St., Chicago
New Jersey Machine Corp., Hoboken, N. J.
Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia
Weigh Right Automatic Scale Co., Joliet, Ill.

SEALING MACHINERY (Cartons)

Allied Steel & Equipment Co., 1007 Springfield Ave., Irvington, N. J.
Burt Machine Co., 401 E. Oliver St., Baltimore
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
Honchin Machinery Co., Hawthorne, N. J.
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, O.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
New Jersey Machine Corp., Hoboken, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stein Equipment Corp., 90 West St., N. Y. (Used)
Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia
Triangle Package Machinery Co., 906 Spaulding Ave., Chicago
Weigh Right Automatic Scale Co., Joliet, Ill.

SEEDS, POISONED (see Poisoned Seeds)

SEQUICARBONATE OF SODA (for Bath Salts, etc.),
(see Sodium Sesquicarbonate)

SHAMPOO BASE and LIQUID (SOAP BASE)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
Baum's Castorine Co., 200 Mathew St., Rome, N. Y.
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
Boston Chemical Industries, 64 E. Brookline St., Boston
Bri-Test Prods. Corp., 845 E. 128th St., New York
Buckingham Wax Co., Van Dam St. & Borden Ave., L. I. City, N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Compounding Corp., 262 Huron St., Bklyn, N.Y.
Chem. Service of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 62 William St., N. Y.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
James County Soap Co., 2nd and Washington Aves., St. Louis
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
E. F. Drew & Co., 15 E. 26th St., New York
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Camden, N. J.
Emulsol Corp., 59 E. Madison St., Chicago
Essential Chemicals, 744 N. 4th St., Milwaukee
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 140th & Seeley Ave., Blue Island, Ill.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Kranich Soap Co., 60 Richards St., Brooklyn
Lewis Soap & Chem. Co., Oakland, Calif.
Los Angeles Soap Co., 617 E. First St., Los Angeles
Manhattan Kreole Prods., 172 N. 10th St., Brooklyn
M. Michel & Co., 90 Broad St., N. Y.
Midland Labs., Dubuque, Ia.
Miranol Chem. Co., P. O. Box 118, Milltown, N. J.
Naphtho, Inc., 15 E. 26th St., N. Y.
Nopco Chem. Co., Harrison, N. J.
N. Y. Soap Co., 258 Third St., Brooklyn

Oil-Kraft, Inc., 3330 Beekman St., Cincinnati
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Warren and Morris Sts., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Sanitax Brush & Prods. Co., 230 E. Ohio St., Chicago
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis
Schmidt Soap Products Co., 236 W. North Ave., Chicago
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
John T. Stanley Co., 624 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Bklyn., N. Y.
Swift & Co., Chicago
Tech Soap Mfg. Co., 125 W. 46th Pl., Chicago
Teso Chem. Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Thompson-Hayward Chem. Co., Kansas City, Mo.
Trio Chem. Wks., 341 Scholes St., Bklyn.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Uncle Sam Chemical Co., 573 W. 131st St., St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Universal Chem. Corp., 35 E. Market St., Akron, O.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
G. H. Wood & Co., Toronto, Canada
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Chas. W. Young & Co., 1247 N. 26th St., Phila.

SHAMPOOS, POWDER AND CAKE

Armour & Co., 1355 W. 31st St., Chicago
Arrow Laboratories, 236 W. North Ave., Chicago
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Davies-Young Soap Co., Dayton, O.
Emulsol Corp., 59 E. Madison St., Chicago
Kranich Soap Co., 60 Richards St., Brooklyn
Lanair Chem. Corp., 236 W. North Ave., Chicago
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Nopco Chem. Co., Harrison, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
John Powell & Co., 1 Park Ave., N. Y.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Jersey City, N. J.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Superior Soap Corp., 121 Nostrand Ave., Bklyn., N. Y.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAMPOOS, SOAPLESS

Alrose Chem. Co., Box 1294, Providence, R. I.
Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
Boston Chemical Industries, 64 E. Brookline St., Boston
Carlstadt Chem. Co., Carlstadt, N. J.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Davies-Young Soap Co., Dayton, O.
Emulsol Corp., 59 E. Madison St., Chicago
Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
General Drug Co., 644 Pacific St., Brooklyn
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Lewis Soap & Chem. Co., Oakland, Calif.
Los Angeles Soap Co., 617 E. First St., Los Angeles
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chemical Co., P. O. Box 118, Milltown, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Nopco Chem. Co., Harrison, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Warren and Morris Sts., Jersey City, N. J.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Sherwood Refining Co., Englewood, N. J.
Skoth Prods. Corp., 2710 Detroit Ave., Cleveland

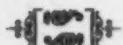
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SHAMPOOS, SOAPLESS (Contd.)

E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.

SHAVING CREAM (Soap and Brushless)

Cenol Co., 4250 N. Pulaski Ave., Chicago
Eagle Soap Corp., Huntington, Ind.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Nopco Chem. Co., Harrison, N. J.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Warren and Morris Sts., Jersey
City, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wriley Co., 6801 W. 65th St., Chicago

SHAVING CREAM BASE

Mirano Chemical Co., P. O. Box 118, Milltown, N. J.
Nopco Chem. Co., Harrison, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Allen B. Wriley Co., 6801 W. 65th St., Chicago

SHAVING SOAP (Cake, Stick, Powder)

Arrow Laboratories, 236 W. North Ave., Chicago
Colgate-Palmolive-Peet Co., Jersey City, N. J.
J. Eavenson & Sons, Del. and Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Lanair Chem. Corp., 236 W. North Ave., Chicago
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
Procter & Gamble Co., Cincinnati
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wriley Co., 6801 W. 65th St., Chicago

SHEET SOAP (see Soap Paper)

SHIPPING CASES (see Boxes)

SHEEP DIPS (see Cattle Dips)

SHELLAC

Barrett Varnish Co., 1532 S. 50, Cicero, Ill.
Bradshaw Praeger & Co., 3248 W. 47th Place, Chicago
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
Gillespie-Rogers-Pyatt Co., 80 John St., N. Y.
Haeuser Shellac Co., 52 Warren St., Brooklyn, N. Y.
George H. Lincks, 155 John St., N. Y.
Mac-Lac Co., Inc., 127 Maiden Lane, N. Y.
Mantrose Corp., 136 41st St., Brooklyn, N. Y.
Schwab Bros. Corp., 102 Maiden Lane, N. Y.
Twin City Shellac Co., 338 Flushing Ave., Brooklyn
Wm. Zinsser & Co., 516 W. 59th St., N. Y.

SHOE POLISH DAUBERS

Alba Cook Co., Jersey City, N. J.
American Cork Specialty Co., 115 Sutton St., Bklyn, N.Y.
Applicator Brush Co., 87 Frankfort St., N. Y.
Applicator Co., 1512 Atlantic Ave., Bklyn., N. Y.
Armstrong Cork Co., Lancaster, Pa.

SIFTER TOP CANS (see Cans, Sifter Top)

SIFTING EQUIPMENT (see Screens)

SILICA

American Colloid Co., 363 W. Superior St., Chicago
California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.

SILICA (Contd.)

Dicalite Co., 120 Wall St., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
Goris & Co., 8124 S. Hoyne Ave., Chicago
K. F. Griffiths & Co., 110 E. 42nd St., N. Y.
Hammill & Gillespie, 225 Broadway, N. Y.
Harshaw Chem. Co., Cleveland
Illinois Silica Co., Cairo, Ill.
Innis, Speiden & Co., 117 Liberty St., N. Y.
International Silica Co., Cairo, Ill.
Johns-Manville Corp., 22 E. 40th St., N. Y.
Pennsylvania Pulverizing Co., Lewistown, Pa.
Jas. H. Rhodes & Co., 153 W. Austin Ave., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Silica Prods. Co., 700 Baltimore Ave., Kansas City, Mo.
A. E. Starkie, 5461 W. Division St., Chicago
Tamma Silica Co., 228 N. La Salle St., Chicago
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

SILICATE OF SODA (see Sodium Silicate)

SILICO FLUORIDES (see Sodium Silicofluoride)

SLABBERS (see Soap Machinery)

SOAP BARK and EXTRACT (see Saponin)

SOAP BOOKS (see Soap Paper)

SOAP, CASTILE (See Castile Soap)

SOAP, CHIP (see Chip Soap)

SOAP COLORS (See Colors)

SOAP DIES

Anthony J. Fries & Son Co., 717 Sycamore St., Cincinnati
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn, N. Y.
R. A. Jones & Co., 315 E. 15th St., Cincinnati
Jas. H. Matthews & Co., 3942 Forbes St., Pittsburgh
I. Schwartz Engraving & Die Works, 38 W. 21st St., N. Y.

SOAP DISPENSERS (Liquid)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
American Dispenser Co., 215 Fourth Ave., N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Bobrick Mfg. Corp., 1839 Blake Ave., Los Angeles 26
Clifton Chemical Co., 62 William St., N. Y.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
L. E. Hicks & Son, 705 S. Grove Ave., Oak Park, Ill.
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Moore Bros. Co., 100 Warren St., N. Y.
Palmer Fixture Co., Waukesha, Wisc.
Rochester Germicide Co., Rochester, N. Y.
Uncle Sam Chemical Co., 573 W. 131st St., St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
G. H. Wood & Co., Toronto, Ont., Canada

SOAP DISPENSERS (Powder)

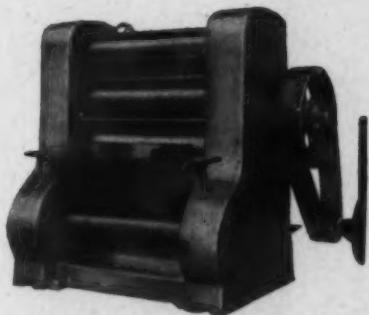
Ace Dispenser Co., 269 Genesee St., Buffalo, N. Y.
Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
American Dispenser Co., 215 Fourth Ave., N. Y.
Bobrick Mfg. Corp., 1839 Blake Ave., Los Angeles 26
Clifton Chemical Co., 62 William St., N. Y.
Federal Tool Corp., 412 N. Leavitt St., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore
L. E. Hicks & Son, 705 S. Grove Ave., Oak Park, Ill.
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 932 W. 38th Place, Chicago

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No. 100-PEER
(Metal)

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Dispenses liquid soap. There are no mechanical parts to wear out. Adapted for heavy usage.



No. 425

Equipped with the unique efficient Moore metal-to-metal seated valve, attractive streamline design.

No. 350 TILT powder same as No. 300. Equipped with controlled powder dispensing nozzle.



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No. 500

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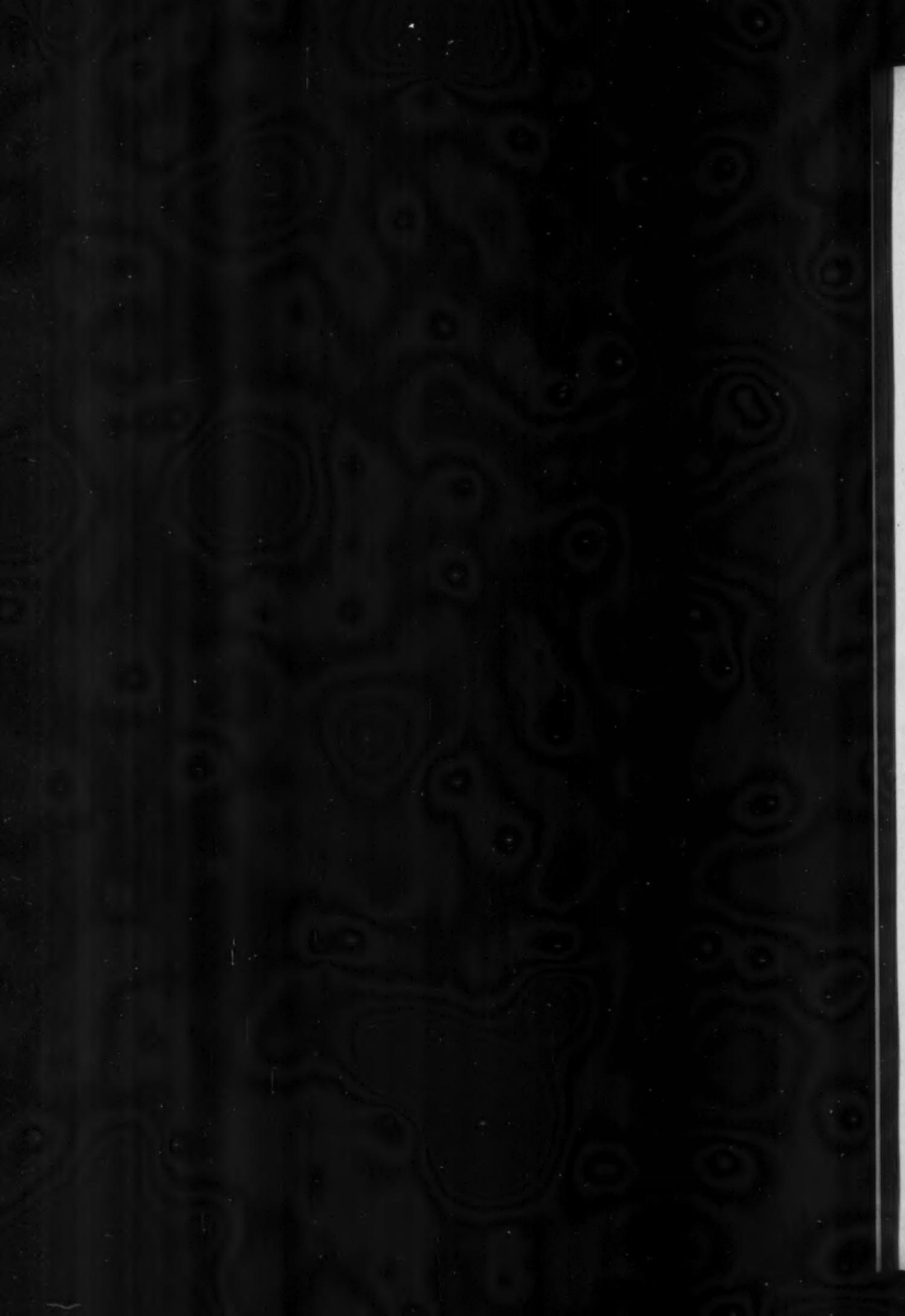
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(Lather—40 oz.)

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Moore Bros. Co., 100 Warren St., N. Y.
Packwood Mfg. Co., St. Louis
Palmer Fixture Co., Waukesha, Wisc.
Presto Mfg. Co., 770 Cromwell Ave., St. Paul, Minn.
Rochester Germicide Co., Rochester, N. Y.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Sugar Beet Prods. Co., Saginaw, Mich.
Uncle Sam Chemical Co., 573 W. 131st St., St. N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
G. H. Wood & Co., Toronto, Ont., Canada
Vasco Products Co., Elmira, N. Y.

**SOAP DISPENSING SYSTEMS (Multi-unit with Tanks
commonly termed "Gravity Feed Systems for Liquid
Soaps")**

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
American Dispenser Co., 215 Fourth Ave., N. Y.
Bobrick Mfg. Corp., 1839 Blake Ave., Los Angeles, 26.
Clifton Chemical Co., 62 William St., N. Y.
Eagle Soap Corp., Huntington, Ind.
R. M. Hollingshead Corp., Camden, N. J.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Hysan Prods. Co., 932 W. 38th Place, Chicago
Moore Bros. Co., 100 Warren St., N. Y.
Palmer Fixture Co., Waukesha, Wis.
Rochester Germicide Co., Rochester, N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
West Disinfecting Co., Long Island City, N. Y.
G. H. Wood & Co., Toronto, Ont., Canada

SOAP DRYERS (see Dryers)

SOAP, FLAKE (see Chip Soap)

SOAP FRAMES (see Frames)

SOAP KETTLES (see Kettles)

SOAP, LINSEED OIL (see Potash Soaps)

SOAP MACHINERY

Allied Steel & Equipment Co., 1007 Springfield Ave.,
Irvington, N. J.
Buhler Bros., Inc., 611 W. 43rd St., N. Y. C.
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259-46th St., Brooklyn
J. M. Lehmann Co., Lyndhurst, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St.,
Chicago

H. K. Porter Co., 49th and Harrison Sts., Pittsburgh
Stein Equipment Co., 90 West St., N. Y. (Used)
Henry Simon, Ltd., Chaddle Heath, Stockport, England
Vickers-Armstrong, Ltd., Broadway, London, England

**SOAP PAPER (Soap Sheets, Soap Pads, Soap Books—also
Soap Cloth)**

Charles F. Hubbs & Co., 383 Lafayette St., N. Y.
Moore Bros. Co., 100 Warren St., N. Y.
Rosefelt Sale Builders, 740 N. Plankinton Ave., Milwaukee, Wisc.
Velso Products Co., Ottumwa, Iowa

SOAP PERFUMES

Albert Albek, Inc., 511 S. Fairfax, Los Angeles
Allondon, Inc., 66 Dey St., N. Y.
American British Chemical Supplies, Inc., 180 Madison
Ave., N. Y.
van Ameringen-Haebler, Inc., 315 Fourth Ave., N. Y.

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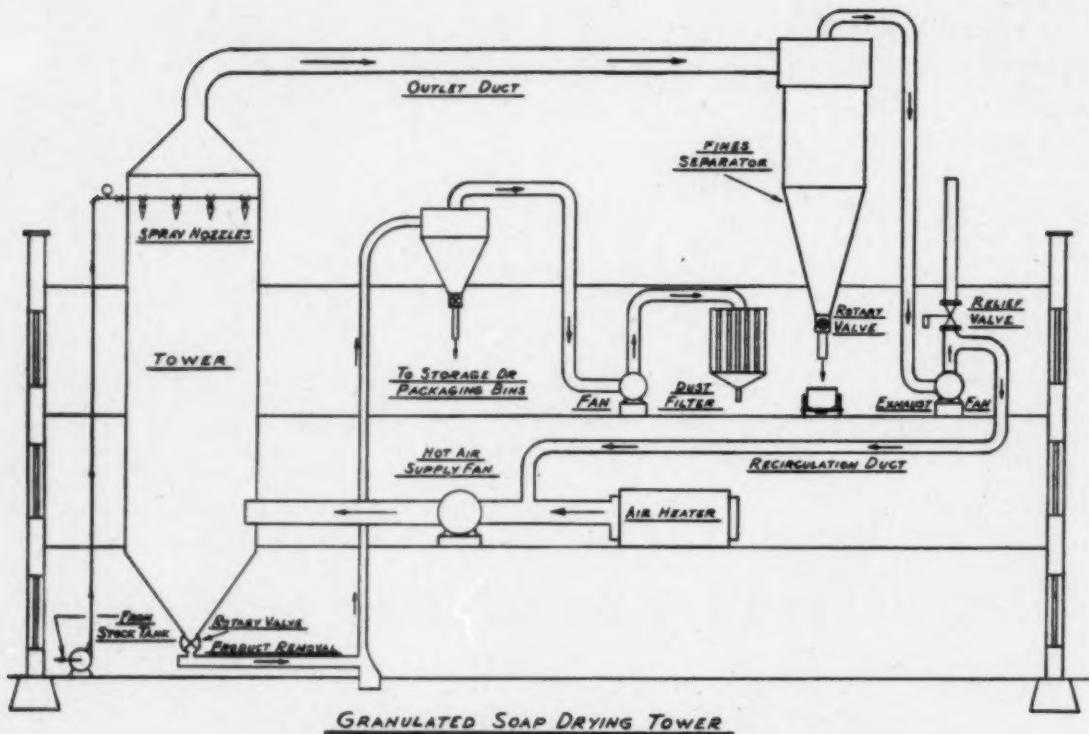
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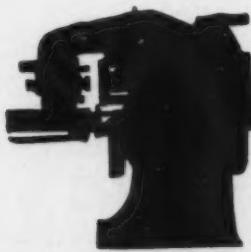
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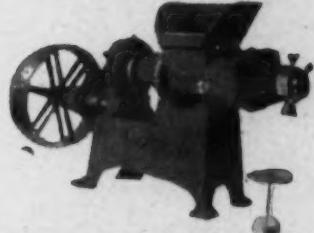
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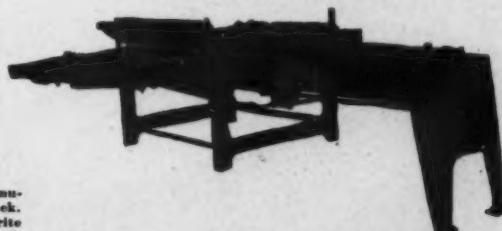
H-A, 1500, 3000, 4000, 5000 lbs. capacity. Steam Jacketed Crutchers.
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Scouring Soap Presses.
Empire State, Dopp & Crosby Foot Presses.
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H-A 4 and 5 roll Steel Mills.
H-A Automatic and Hand-Power slabbers.
Proctor & Schwartz Bar Soap Dryers.
Blanchard No. 10-A and No. 14 Soap Powder Mills.
J. H. Day Jaw Soap Crushers.
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Day Talcum Powder Mixers.
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Soap Dies for Foot and Automatic Presses.
Broughton Soap Powder Mixers.
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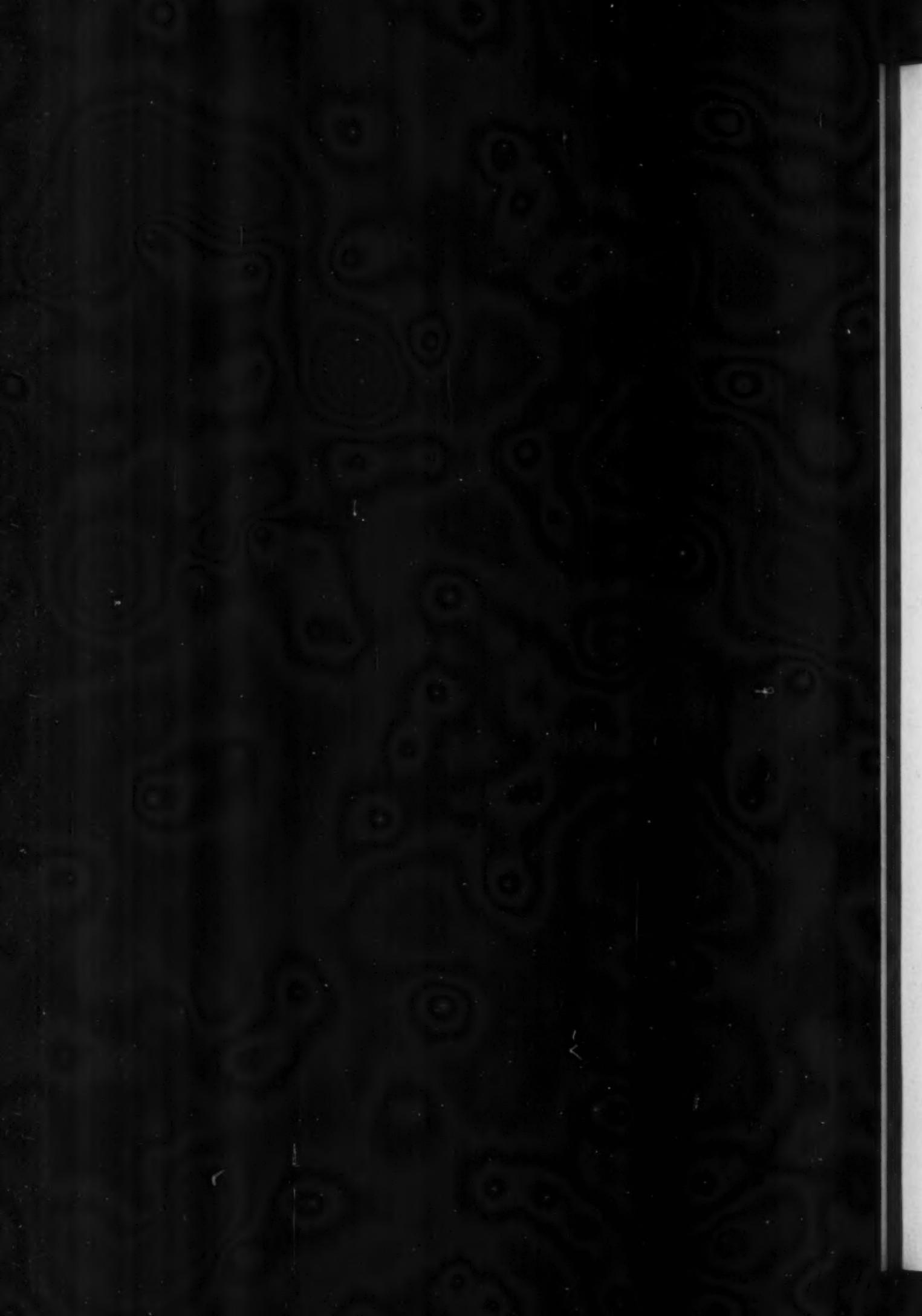
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SOAP PERFUMES (Contd.)

Aromatic Products, Inc., 15 E. 30th St., N. Y.
Bush Aromatics, Inc., 136 Liberty St., New York
Centiflor Mfg. Co., 450 W. 31st St., N. Y.
Ph. Chaleyer, Inc., 160 E. 56th St., N. Y.
Antoine Chiris Co., Inc., 119 W. 57th St., N. Y.
Compagnie Duval, Division of S. B. Penick & Co., 50 Church St., N. Y.
Compagnie Paranto, Croton-on-Hudson, N. Y.
Dodge & Olcott, Inc., 180 Varick St., N. Y.
P. R. Dreyer, Inc., 119 W. 19th St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Felton Chemical Co., 603 Johnston Ave., Brooklyn
Firmenich & Co., 250 W. 18th St., N. Y.
Fluoroma, Inc., 73 Sullivan St., N. Y.
Florasynth Labs., 1513 Olmstead Ave., Bronx, N. Y.
Benj. French, Inc., 160 5th Ave., N. Y.
Fritzache Bros., Inc., 76 Ninth Ave., N. Y.
General Drug Co., 644 Pacific St., Brooklyn
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Gunning & Gunning, 601 W. 26th St., N. Y.
D. W. Hutchinson & Co., 162 Front St., N. Y.
Lautier Fils, 321 Fifth Ave., N. Y.
Geo. Lueders & Co., 427 Washington St., N. Y.
Magnus, Mabe & Reynard, 16 Desbrosses St., N. Y.
Naugatuck Aromatics, 254 Fourth Ave., N. Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
New York Aromatics Co., 5 Beekman St., N. Y.
Norda Essential Oil & Chem. Co., 601 W. 16th St., N. Y.
Noville Essential Oil Co., 157 Cedar St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Perry Bros., Inc., 220 Flushing Ave., Brooklyn
Polak & Schwartz, Inc., 667 Washington St., N. Y.
Polak's Frutal Works, 36-14 35th St., L. I. City, N. Y.
Edw. Remus & Co., 11 W. 42nd St., N. Y.
Henri Robert, Inc., 39 W. 60th St., N. Y.
Rouze-Dupont, Inc., 366 Madison Ave., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Edwin Seebach Co., 912 Broadway, N. Y.
Seeley & Co., 136 Liberty St., N. Y.
Sparhawk Co., Sparkill, N. Y.
Synfleur Scientific Labs., Monticello, N. Y.
Syntomatic Corp., 114 E. 32nd St., N. Y.
Tombarel Prods. Corp., 12 E. 22nd St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.
Van Dyk & Co., Belleville, N. J.
Albert Verley, Inc., 440 W. Superior St., Chicago

SOAP PLANTS (Engineering)

Alan Porter Lee, 150 Broadway, N. Y.
Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

SOAP POWDER MILLS

Abbe Engineering Co., 50 Church St., N. Y.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 359 46th St., Brooklyn, N. Y.
J. M. Lehmann Co., Lyndhurst, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago (Used)
Prater Pulverizing Co., 1825 55th Ave., Chicago
Henry Simon, Ltd., Cheadle Heath, Stockport, Eng.
Stein Equipment Co., 90 West St., N. Y. (Used)
Vickers-Armstrong, Ltd., Broadway, London, England

SOAP, POWDERED (White neutral powdered soap, powdered castile soap, etc., 95-99 per cent anhydrous soap. Do not confuse with Soap Powders.)

Armour Soap Wks., 1355 W. 31st St., Chicago
Arrow Laboratories, 236 W. North Ave., Chicago
Chem. Mfg. & Dist. Co., Jersey City, N. J.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Conti Products Corp., 155 Varick St., N. Y.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Camden, N. J.
Enjay Co., 15 W. 51st St., N. Y.
L. E. Hicks & Son, 507 S. Grove Ave., Oak Park, Ill.

J. L. Hopkins & Co., 220 Broadway, N. Y.
Imperial Prods. Co., 1600 Fontain St., Phila.
Insto Co., 110 Center St., Los Angeles
Kranich Soap Co., 60 Richards St., Brooklyn, N. Y.
Lanair Chem. Corp., 236 W. North Ave., Chicago
Lightfoot Schults Co., 1412 Park Ave., Hoboken, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 1 Park Ave., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
G. H. Wood & Co., Toronto, Ont., Canada
Allen B. Wrisley Co., 6801 W. 56th St., Chicago

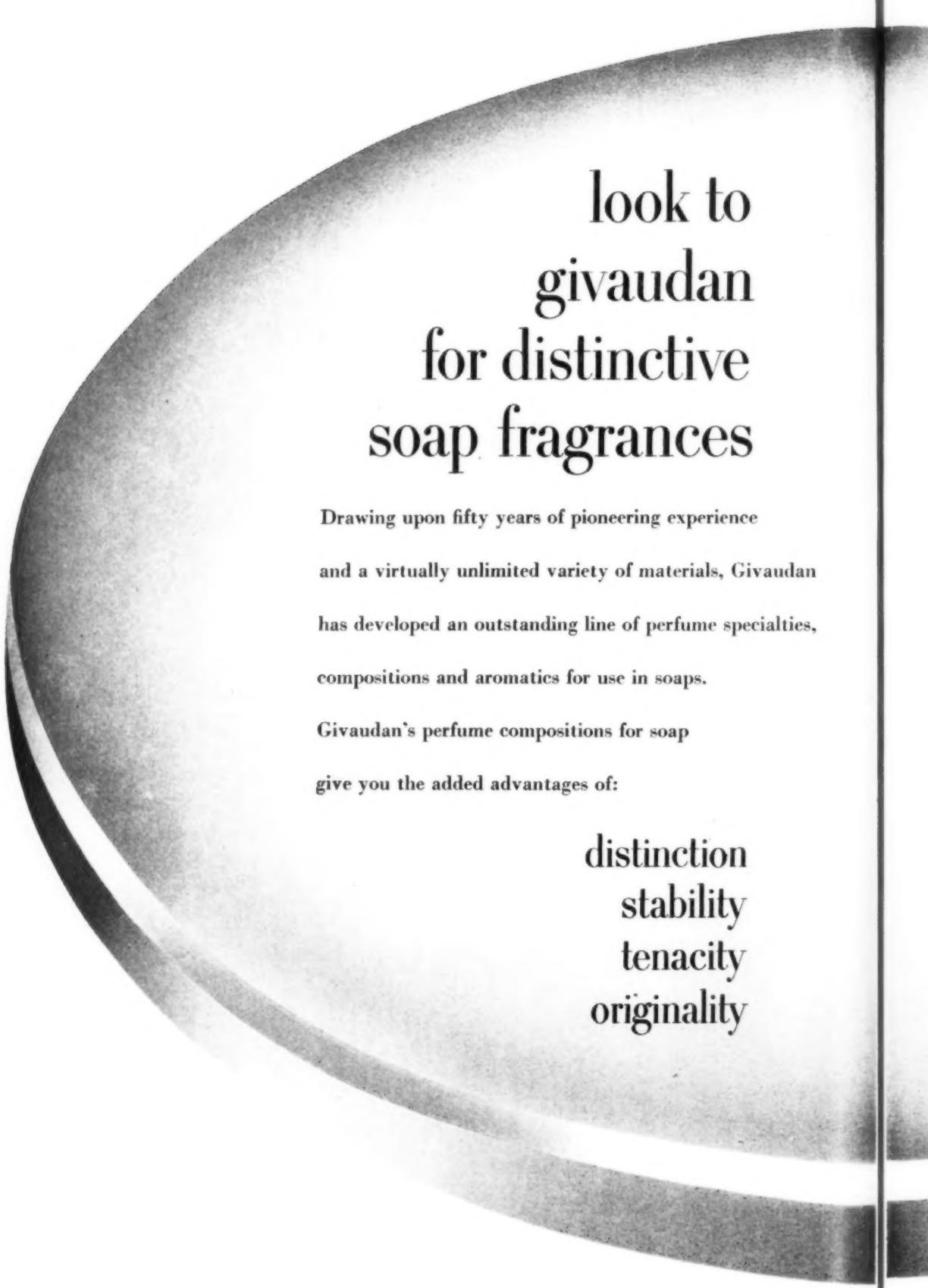
SOAP POWDERS

(Do not confuse with pure powdered soaps)

Aid Soap Mfg. Co., 1962 Enoch St., Pittsburgh, Pa.
American Soap Powder Wks., Inc., 98 Van Dyk St., Brooklyn
American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Chemical Mfg. & Dist. Co., Easton, Pa.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati
East Coast Soap Corp., 98-106 Van Dyke St., Bklyn. 31
J. Eavenson & Sons, Camden, N. J.
Essential Chemicals, 744 N. 4th St., Milwaukee
Gaylor Chem. Co., 701 Woodswether Rd., Kansas City, Mo.
Hercules Powder Co., Wilmington, Del.
Hewitt Soap Co., Dayton, O.
Hockwald Chemical Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Kamen Soap Prods. Co., Woolworth Bldg., N. Y.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave., Chicago
Klix Chem. Co., 2460 Third St., San Francisco
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Los Angeles Soap Co., 617 E. First St., Los Angeles
MacKenzie Labs., Front & Yarnall Sts., Chester, Pa.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
Miranol Chem. Co., 16 Melville Pl., Irvington, N. J.
Naphole, Inc., 15 E. 26th St., N. Y.
National Milling & Chem. Co., Manayunk, Phila.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Phipps Products Co., 30 Huntington Ave., Boston
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
Stevens Soap Corp., 200 Sullivan St., Brooklyn
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Vasco Prods. Co., Elmira, N. Y.
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Western Chem. & Mfg. Co.,
4032 S. Wentworth Ave., Chicago
G. H. Wood & Co., Toronto, Ont., Canada
Chas. W. Young & Co., Phila.

SOAP PRESSES (see Presses)

SOAP SHEETS (see Soap Paper)



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Drawing upon fifty years of pioneering experience
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has developed an outstanding line of perfume specialties,
compositions and aromatics for use in soaps.
Givaudan's perfume compositions for soap
give you the added advantages of:

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stability
tenacity
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synthetic aromatics

are today indispensable for soap perfumery. As a leader in this field, Givaudan has set the standard of quality through constant and tireless research, the development of control processes that assure chemical purity, and the application of advanced olfactory knowledge and skill.

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Solid	76% Na ₂ O
Flake	76% Na ₂ O, Fine and Medium
Ground and Powdered	76% Na ₂ O

Columbia Caustic Soda is especially desirable for the manufacture of soap because of its freedom from impurities and metallic contamination. Liquid grades are shipped in special tank cars which first made practical the shipment of 73% Caustic Liquor in its purest form. Insulation effectively prevents crystallization and the patented lining prevents metallic contamination in transit.

Other grades test 98-100% Sodium Hydroxide (NaOH), equivalent to 76% Na₂O. Flake Caustic Soda is prepared in two grades of fine and medium sized flakes, free of dust. The finer grade is especially suitable for repacking for household use, as are the Ground and Powdered grades.

Soda Ash—Light and Dense

The original Columbia chemical. Nearly a half-century's experience in the manufacture of this essential chemical for soap makers has enabled the development of techniques and controls that assure uniform density and regularity of physical form and purity.

Special Cleansers

COLUMBIA CLEANER AND CLEANSER is a specially prepared product for general use in all hand cleaning operations. A white powder containing no harmful inactive ingredients, it dissolves rapidly and completely in water. COLUMBIA PHOSFLAKE is a uniform blend of Caustic Soda and Tri Sodium Phosphate, prepared in convenient flake form. Especially adapted to machine bottle washing—quick acting, easy to handle (no dust particles to irritate the skin and throat of the operator), superior in sterilizing and rinsing properties.

Modified sodas

Mixtures of Sodium Carbonate and Sodium Bicarbonate. Especially useful in cleansing operations requiring a mild alkaline detergent-aid. Manufactured in three grades—No. 100, No. 200 and No. 300—with different degrees of alkalinity.

COLUMBIA TECHNICAL SERVICE

Columbia's Technical Service is available for developing the most advantageous uses of these or other Columbia products in your processes.

COLUMBIA CHEMICALS



Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth at Bellefield,
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PITTSBURGH PLATE GLASS COMPANY

SOAP SOLUTIONIZING DEVICE (Solutionizing and dispensing drums for soft soaps)

Clifton Chemical Co., 247 Front St., N. Y.
Davies-Young Soap Co., Dayton, O.
Rudolph Guth, Inc., 9604 Meech Ave., Cleveland, Ohio
Independent Specialties, 152 W. 75th St., Chicago

SOAP SLABBERS (see Soap Machinery)

SOAP STOCK (Boiled down cotton oil soap stock, etc.)

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
Brode Corp., Memphis, Tenn.
T. G. Cooper & Co., Cedar and Venango Sts., Phila.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Wm. H. Floyd & Co., Los Angeles
H. Hentz & Co., 60 Beaver St., N. Y.
Portsmouth Cotton Oil Refining Co., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
Southern Cotton Oil Co., 21 West St., N. Y.
A. E. Staley Mfg. Co., Decatur, Ill.
Welch, Holme & Clark Co., 439 West St., N. Y.

SOAP VALVES (see Soap Dispensing Systems)

SOAP, WHALE OIL (see Whale Oil Soap)

SOAP WRAPPING MACHY. (see Wrapping Mach.)

SOAPLESS DETERGENTS (see Detergents, Synthetic)

SOAPLESS SHAMPOOS (see Shampoos Soapless)

SOAPS, AUTO (see Potash Soaps)

SOAPS, FLOATING (see Floating Soaps)

SOAPS, GRANULATED (see Laundry Soaps, Granulated)

SOAPS, LIQUID (see Potash Soaps)

SOAPS, MEDICINAL, CAKE (see Medicinal Soaps, Cake)

SOAPS, MOTTLED (see Mottled Soaps)

SOAPS, PINE SCRUB (see Pine Scrub Soaps)

SOAPS, SCOURING (see Scouring Soaps)

SOAPS, SCRUBBING (see Floor Scrub Soaps)

SOAPS, SURGICAL (see Potash Soaps)

SOAPS, TEXTILE (see Textile Soaps)

SODA ASH

(see also Dealers)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Matheson Chemical Co., 60 E. 42nd St., N. Y.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Penn Salt Mfg. Co., Widener Bldg., Phila.
Philipp Bros., 70 Pine St., N. Y.
Pittsburgh Plate Glass Co., Columbia Chemical Div.,
Grant Bldg., Pittsburgh

Chas. L. Read & Co., 120 Greenwich St., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

SODA (Modified)

(see also Dealers)

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Los Angeles Soap Co., 617 E. First St., Los Angeles
Mathieson Chemical Co., 60 E. 42nd St., N. Y.
Pittsburgh Plate Glass Co., Columbia Chem. Div.,
Grant Bldg., Pittsburgh
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

SODIUM ACID SULFATE (see Nitre Cake)

SODIUM ALGINATE

Algin Corp. of America, 24 State St., N. Y.
Keleo Co., 31 Nassau St., N. Y.

SODIUM ARSENITE

Chipman Chem. Co., Bound Brook, N. J.
Geigy Co., 89 Barclay St., New York
Merck & Co., Rahway, N. J.
Penn Salt Mfg. Co., Widener Bldg., Phila.
Shepherd Chem. Co., Cincinnati 12, O.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.

SODIUM BENZOATE

J. T. Baker Chem. Co., Phillipsburg, N. J.
Dow Chem. Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Heyden Chem. Corp., 393 7th Ave., N. Y.
Hooker Electrochem. Co., Niagara Falls, N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Seydel Chem. Co., 225 Mercer St., Jersey City, N. J.

SODIUM BICARBONATE

(see also Dealers)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Church & Dwight Co., 70 Pine St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Chemical Co., 60 E. 42nd St., N. Y.
Monsanto Chem. Co., 1800 S. 2nd St., St. Louis
Pennsylvania Salt Mfg. Co., Widener Bldg., Philadelphia
Pittsburgh Plate Glass Co., Columbia Chemical Div.,
Grant Bldg., Pittsburgh
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.



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An efficient and economical complex phosphate for calcium sequestration. Low alkalinity. Non-caking. Compatible with crystalline products in dry mixtures.

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Liquid 50% — Regular and Rayon Grades. Liquid 70-73%. Flake and Solid, 76% Na₂O.

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SODIUM BICHLORATE

(see also Dealers)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Merck & Co., Rahway, N. J.
Mutual Chemical Co., 270 Madison Ave., N. Y.
Natural Products Refining Co., 900 Garfield Ave., Jersey City, N. J.
Prior Chem. Corp., 420 Lexington Ave., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

SODIUM BISULFATE (see Nitre Cake)

SODIUM CARBONATE (see Soda Ash)

SODIUM CHLORATE

J. T. Baker Chem. Co., Phillipsburg, N. J.
Chipman Chem. Co., Bound Brook, N. J.
E. I. du Pont de Nemours & Co., Wilmington
Merck & Co., Rahway, N. J.
Oldbury Electrochem. Co., 22 E. 40th St., N. Y.
Penn Salt Mfg. Co., Widener Bldg., Phila.
Sergeant Chem. Co., 7 Dey St., N. Y.
Western Electrochem. Co., Los Angeles 23, Calif.

SODIUM CHLORIDE (see Salt, Common Salt)

SODIUM CYANIDE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Merck & Co., Rahway, N. J.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

SODIUM FLUORIDE (see Fluorides)

SODIUM FLUOSILICATE (see Sodium Silicofluoride)

SODIUM HYDROSULFITE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
General Dyestuffs Corp., 435 Hudson St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Royce Chemical Co., Carlton Hill, N. J.

SODIUM HYPOCHLORITE (see Laundry Bleach)

SODIUM HYPOSULFITE (Thiosulfate)

E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
A. R. Maas Chem. Co., South Gate, Calif.
Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
Rohm & Haas, 222 W. Washington Sq., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Virginia Smelting Co., W. Norfolk, Va.

SODIUM LAURYL SULFATE (see Sulfonated Fatty Alcohols)

SODIUM METASILICATE

Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
MacKenzie Laboratories, Front & Yarnall Sts., Chester, Pa.
Philadelphia Quartz Co., 125 S. 3rd St., Phila., Pa.
Welch, Holme & Clark Co., 439 West St., New York

SODIUM METAPHOSPHATE

Blockson Chem. Co., Joliet, Ill.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Griffin Chemical Co., 1000 16th St., San Francisco
MacKenzie Labs., Front & Yarnell Sts., Chester, Pa.
Mechling Bros. Chemical Co., Camden, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Welch, Holme & Clark Co., 439 West St., N. Y.

SODIUM ORTHOSILICATE

Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila.

SODIUM PERBORATE

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Croton Chem. Corp., 114 Liberty St., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.

SODIUM PYROPHOSPHATE (see Tetra Sodium Pyrophosphate)

SODIUM SESQUICARBONATE

Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Mechling Bros. Chemical Co., Camden, N. J.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

SODIUM SESQUISILICATE

Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
Innis, Speiden & Co., 117 Liberty St., N. Y.
MacKenzie Laboratories, Front & Yarnall Sts., Chester, Pa.
Philadelphia Quartz Co., 125 S. 3rd St., Phila.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.

SODIUM SILICATE

(see also Dealers)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mechling Bros. Chem. Co., Camden, N. J.
Philadelphia Quartz Co., 125 S. 3rd St., Phila.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
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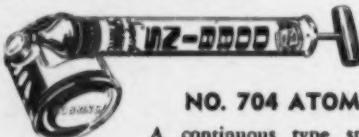
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The discharge has a wide range of adjustments, from a forceful, penetrating spray, to fine floating fog, with in-between variations. Controlled atomization through air regulator is an exclusive feature.



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Blockson Chemical Co., Joliet, Ill.
Concord Chem. Co., Independence Sq., Phila.
Croton Chem. Corp., 114 Liberty St., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Charles Hardy, Inc., 415 Lexington Ave., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
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Penn. Salt Mfg. Co., Widener Bldg., Phila.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Sergeant Chem. Co., 7 Dey St., N. Y.
Henry Sundheimer, Inc., 103 Park Ave., N. Y.
Tennessee Corp., Atlanta, Ga.
Jos. Turner & Co., Ridgefield, N. J.

SOFT SOAPS (See Potash Soaps)

SOLUBLE OILS (See Sulfonated Oils)

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S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Commerce Petroleum Co., 2923 Lock St., Chicago
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Disco Co., Oliver Bldg., Pittsburgh
Koppers Co., Koppers Bldg., Pittsburgh
Neville Co., Pittsburgh
Pennsylvania Refining Co., Butler, Pa.
Reilly Tar & Chemical Corp., Indianapolis
Shell Oil Co., 50 W. 50th St., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co., (Ind.), 910 S. Michigan Ave., Chicago
Woburn Chemical Corp., Harrison, N. J.

SOLVENTS (Chlorinated, also alcohols, coal tar derivatives, etc.)

Barrett Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Crosby Chemicals, Inc., De Ridder, La.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Disco Co., Oliver Bldg., Pittsburgh
Delta Chemical Co., 2101 Washington Blvd., Baltimore
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Wilmington, Del.
Enjay Co., 15 W. 51st St., N. Y.
Hercules Powder Co., Wilmington
Hooker Electrochemical Co., Niagara Falls, N. Y.
Kessler Chem. Corp., Philadelphia
Koppers Co., Koppers Bldg., Pittsburgh
Monsanto Chemical Co., 1700 2nd St., St. Louis
Neville Co., Pittsburgh
Newport Industries, 230 Park Ave., N. Y.
Pennsylvania Refining Co., Butler, Pa.
Reilly Tar & Chemical Corp., 123 S. Broad St., Indianapolis
Sharples Solvents Corp., 100 Bush St., Phila.
Shell Chemical Corp., San Francisco
Skelly Oil Co., Kansas City
U. S. Industrial Chem. Co., 60 E. 42nd St., N. Y.
Velsicol Corp., 330 E. Grand Ave., Chicago
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.

SOLVENTS, PETROLEUM

American Mineral Spirits Co., 230 N. Michigan Ave., Chicago
Anderson-Pritchard Oil Co., Oklahoma City, Okla.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Commerce Petroleum Co., 2923 Lock St., Chicago
Deep Rock Oil Corp., 155 N. Clark St., Chicago
E. I. du Pont de Nemours Co., Wilmington, Del.
Oil States Pet. Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler, Pa.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Shell Oil Co., 50 W. 50th St., N. Y.
Sinclair Refining Co., 630 5th Ave., N. Y.
Skelly Oil Corp., 605 W. 47th St., Kansas City, Mo.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co., (Ind.), 910 S. Michigan Ave., Chicago
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Velsicol Corp., 330 E. Grand Ave., Chicago

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(see also Brokers and Dealers)

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Eastern Industries, Inc., Ridgefield, N. J.
William O. Goodrich Co., Milwaukee, Wis.
W. R. Grace & Co., 7 Hanover Sq., N. Y.
Spencer Kellogg & Son, Buffalo, N. Y.
Leghorn Trading Co., 21 West St., N. Y.
Pacific Vegetable Oil Co., 62 Townsend St., San Francisco
Procter & Gamble Co., Cincinnati
Purina Mills, St. Louis
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Staley Mfg. Co., Decatur, Ill.
A. E. Starkie Co., 5461 W. Division St., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.

SPERMACETI

E. A. Bromund Co., 258 Broadway, N. Y.
A. C. Drury & Co., 210 E. Water St., Chicago
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lenape Trading Co., 233 Broadway, N. Y.
George H. Lincks, 155 John St., N. Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Smith & Nichols, 121 Maiden Lane, N. Y.
Strohmeyer & Arpe Co., 139 Franklin St., N. Y.
Will & Baumer Candle Co., Syracuse, N. Y.

SPONGES (Natural and Synthetic)

Addison Sponge Co., 118 E. Court St., Cincinnati
Allied Industrial Prods. Co., 620 N. Michigan, Chicago
American Sponge & Chamois Co., 47 Ann St., N. Y.
American Standard Mfg. Co., 2509 S. Green St., Chicago
Atlas Sponge Co., 291 Church St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington
Florida Sponge & Chamois Co., 42 Cliff St., N. Y.
Great Eastern Sponge & Chamois Co., 833 N. Catt. Pk. Ave., Baltimore
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Robinson Sponge Co., 1805 Atlantic Ave., Brooklyn

SPOTTING FLUIDS (see Cleaning Fluids)

SPOUTS (see Can Spouts, Closures)

SPRAYERS, BOTTLE

Arnold-Copeland Co., 22 Elkins St., So. Boston, Mass.
Federal Tool Corp., 412 N. Leavitt St., Chicago
Wilco Co., 7016 McKinley Ave., Los Angeles

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DeVilbiss Co., Toledo, O.
Dobbins Mfg. Co., Elkhart, Ind.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Fumeral Co., Racine, Wis. (built in systems)
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Lofstrand Co., Rockville, Md.
Lowell Mfg. Co., 589 E. Illinois St., Chicago
Miller-Simons, Inc., 2900 S. 61st Court, Chicago
Mystic Products Co., 415 N. 5th Ave., S., Minneapolis
Piezo Mfg. Corp., 110 E. 42nd St., N. Y.
Simmon Paint Spray Brush Co., Dayton, O.
Universal Metal Prods. Co., Lowell, Mich.
Volume Sprayer Mfg. Co., Tulsa, Okla.

SPRAYERS, ELECTRIC

Acmeine Mfg. Co., Traverse City, Mich.
Binks Mfg. Co., 3114 Carroll Ave., Chicago
DuLa Mfg. Co., 351 Atlantic Ave., Brooklyn, N. Y.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Fumeral Co., Racine, Wis.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Lowell Mfg. Co., 589 E. Illinois St., Chicago
Metal Specialties Mfg. Co., 3208 Carroll Ave., Chicago
Piezo Mfg. Corp., 110 E. 42nd St., N. Y.
Sprayer Corp. of America, 1712 Payne St., Evanston, Ill.

SPRAYERS, ELECTRIC, STEAM

DuLa Mfg. Co., 351 Atlantic Ave., Brooklyn
Fumeral Co., Racine, Wis.
Hydro-Mist Corp., 531 State St., Glendale, Calif.
Kaz Mfg. Co., 611 W. 43rd St., N. Y.
Lowell Mfg. Co., North Pier Terminal, Chicago
Mayfair Industries, 2442 Irving Park Road, Chicago
Mystic Products Co., 415 N. 5th Ave., S., Minneapolis
Sanitary Aids Co., St. Louis

SPRAYERS, HAND

Acmeine Mfg. Co., Traverse City, Mich.
R. E. Chapin Mfg. Works, Batavia, N. Y.
Dobbins Mfg. Co., Elkhart, Ind.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Jaeckh Mfg. Co., Cincinnati
Lowell Mfg. Co., 589 E. Illinois St., Chicago
D. B. Smith Co., Utica, N. Y.
Standard Container, Inc., Rockaway, N. J.
Universal Metal Prods. Co., Lowell, Mich.
Volume Sprayer Mfg. Co., Tulsa, Okla.
Wilco Co., 6800 McKinley Ave., Los Angeles

SPRAYERS, MOUTH

Acmeine Mfg. Co., Traverse City, Mich.
Arnold-Copeland Co., 22 Elkins St., So. Boston, Mass.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Lowell Mfg. Co., 589 E. Illinois St., Chicago
D. B. Smith & Co., Utica, N. Y.
Standard Container, Inc., Montclair, N. J.

SPRAYERS, POWER (Heavy Duty)

Banta & Driscoll Co., 4729 E. Olympic Blvd., Los Angeles
John Bean Mfg. Co., Div. Food Mach. Co., Lansing, Mich.
Besler Corp., 4053 Harlan St., Emeryville, Calif.
Buffalo Turbine Agri. Equip. Co., Gowanda, N. Y.
Dobbins Mfg. Co., Elkhart, Ind.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Fumeral Co., Racine, Wis.
Hession Microsol Corp., 166 Post Rd., Darien, Conn.
Howard Hanson & Co., Beloit, Wis.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago

Hydro-Mist Corp., 531 State St., Glendale, Calif.
Madewell Products, 3125 E. 7th St., Oakland, Calif.
Mayfair Industries, 2442 Irving Park Road, Chicago
Mullen Crafts Co., 25 Pennsylvania St., Evansville, Ind.
Oberdorfer Foundries, Inc., 5100 Thompson Rd., Syracuse
Todd Shipyards Corp., 601 W. 26th Street, N. Y.
Victor Products Corp., Funkhouser Industries Bldg.,
Ransom, W. Va.
Virginia Smelting Co., W. Norfolk, Va.

SPRAYERS, NOZZLES for

Spraying Systems Co., 4027 W. Lake St., Chicago

SPRAY SYSTEMS, PERMANENT INSTALLATIONS

Fumeral Co., Racine, Wis.
Virginia Smelting Co., West Norfolk, Va.

SPREADERS for INSECTICIDE (see Clays, Emulsifiers, etc.)

SQUEEGEES

Ardmore Mfg. Co., 5082 N. Lincoln Ave., Chicago
W. J. Dennis & Co., 1732 N. Kolmar, Chicago
A. F. Dormeyer Mfg. Co., 4316 N. Kilpatrick St., Chicago
Aug. Hanke & Son Co., 6326 W. Guyer Ave., Chicago
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
J. Racenstein & Co., 621 Broadway, N. Y.
Reliance Hardward & Mfg. Co., 1438 N. Keating St.,
Chicago
White Mop Wringer Co., Fultonville, N. Y.

SQUILLS (Rodent Poison)

Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
J. L. Hopkins & Co., 220 Broadway, N. Y.
McLaughlin Gormley King Co., 1715 5th St., S. E.,
Minneapolis, Minn.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
Ratin Laboratory, 116 Broad St., N. Y.
York Chem. Co., 23 Dean St., Bklyn.

STANNOUS CHLORIDE (see Tin Crystals)

STARCH

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller
Plaza, N. Y.
Arabol Mfg. Co., 110 E. 42nd St., N. Y.
T. G. Cooper & Co., Cedar and Venango Sts., Phila.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Keever Starch Co., Columbus, O.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
National Starch Prods., 270 Madison Ave., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
L. A. Salomon & Bro., 215 Pearl St.
A. E. Staley Mfg. Co., Decatur, Ill.
Welch, Holme & Clark Co., 439 West St., N. Y.

STEARATES (Zinc, Calcium, Magnesium, etc)

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller
Plaza, N. Y.
Cuprinol Inc., 7 Water St., Boston
E. I. du Pont de Nemours Co., Wilmington, Del.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y. (Glyceryl
Glycol)
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hooker Electrochemical Co., Niagara Falls, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kessler Chem. Co., 7272 State Rd., Phila.
Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
Metasap Chem. Co., First & Essex Sts., Harrison, N. J.
Nopco Chem. Co., Harrison, N. J.

STEARATES (Contd.)

M. W. Parsons, Inc., 59 Beekman St., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Synthetic Products Co.,
London Rd. & Euclid Ave., Cleveland
Jos. Turner & Co., Ridgefield, N. J.
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.
Witeco Chemical Co., 295 Madison Ave., N. Y.

STEARIC ACID

(see also Brokers and Dealers)

American British Chem. Supplies, Inc., 180 Madison Ave., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Armour Chem. Div., Armour & Co., 1355 W. 31st St., Chicago
Cenna Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Wks., 41 E. 42nd St., N. Y.
Chemical Sales Corp., Pittsburgh, 19
Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 295 Madison Ave., N. Y.
Griffin Chem. Co., 1000 16th St., San Francisco
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Harkness & Cowing, Ivorydale, Cincinnati
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.
Nopco Chem. Co., Harrison, N. J.
Orbis Products Corp., 215 Pearl St., N. Y.
Procter & Gamble Co., Cincinnati
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie, 5461 W. Division St., Chicago
Theobald Industries, Kearny, N. J.
Welch, Holme & Clark Co., 439 West St., N. Y.
M. Werk Co., St. Bernard, Cincinnati
Will & Baumer Candle Co., Syracuse, N. Y.
Wilson-Martin Co., Snyder Ave. & Swanson St., Phila.
Witeco Chemical Co., 295 Madison Ave., N. Y.

STEARINE

(see also Brokers and Dealers)

Cenna Stearic Acid Co., Celina, Ohio
Darling & Co., 4201 S. Ashland Ave., Chicago
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
Independent Mfg. Co., Brdesburg P. O., Phila.
Morris Co., Union Stock Yards, Chicago
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
Procter & Gamble Co., Cincinnati
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie, 5461 W. Division St., Chicago
Louis Stern Sons, Inc., Produce Exch., N. Y.
Swift & Co., Union Stock Yards, Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
Wilson & Co., 4100 Ashland Ave., Chicago
G. S. Ziegler & Co., 233 Bdway., N. Y.

STEARINE PITCH

Allied Asphalt & Mineral Corp., 217 Broadway, N. Y.
Armour Chem. Div., Armour & Co., 1355 W. 31st St., Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 295 Madison Ave., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Procter & Gamble Co., Ivorydale, O.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie, 5461 W. Division St., Chicago
Wilson & Co., 4100 Ashland Ave., Chicago
G. S. Ziegler & Co., 233 Broadway, N. Y.

STEEL DRUMS (see Drums, Steel)

STEEL PAILS (see Pails, Steel)

STEEL, NICKEL CLAD

Illinois Steel Co., 208 S. La Salle St., Chicago
International Nickel Co., 67 Wall St., N. Y.
Lukens Steel Co., Coatesville, Pa.
Republic Steel Corp., Republic Bldg., Cleveland, O.

STEEL TANKS (see Tanks, Steel)

STEEL WOOL

American Steel Wool Mfg. Co., 42-24 Orchard St., L. I. City, N. Y.
International Steel Wool Co., Springfield, Ohio
Multi-Clean Prods., Inc., 2277 Ford P'kway, St. Paul, Minn.
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Williams Co., London, Ohio

STODDARD'S SOLVENT (see Solvents, Petroleum)

STORAGE TANKS (see Tanks, Storage, etc.)

SUDSING EQUIPMENT (see Soap Solutionizing Device)

SULFATED FATTY ALCOHOLS (and other Non-Soap Organic Detergents, and Derivatives (see also Detergents, Synthetic)

Alrose Chem. Co., Box 1294, Providence, R. I.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., Boonton, N. J.
E. I. du Pont de Nemours Co., Wilmington, Del.
Emulsol Corp., 59 E. Madison St., Chicago
General Dyestuff Corp., 435 Hudson St., N. Y.
Hummel Chemical Co., 90 West St., N. Y.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
M. Michel & Co., 90 Broad St., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Nopco Chem. Co., Harrison, N. J.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Jersey City, N. J.
Sandos Chemical Works, 61 Van Dam St., N. Y.
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Jacques Wolfe & Co., Passaic, N. J.

SULFONATED OILS

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
Atlantic Refining Co., 260 S. Broad St., Phila.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Colloids, Inc., 395 Frelinghuysen Ave., Newark, N. J.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, 4300 Carew Tower, Cincinnati
General Dyestuff Corp., 435 Hudson St., N. Y.
Hercules Powder Co., Wilmington
Kali Mfg. Co., 1408 N. Front St., Philadelphia
Nopco Chem. Co., Harrison, N. J.
Rare Chemicals, Inc., 1st and Essex Sts., Harrison, N. J.
Richards Sales Corp., Jersey City, N. J.
Sandos Chemical Works, 61 Van Dam St., N. Y.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Ultra Chem. Wks., 2 Wood St., Paterson, N. J.
Warwick Chem. Co., West Warwick, R. I.
Welch, Holme & Clark Co., 439 West St., N. Y.
Jacques Wolfe & Co., Passaic, N. J.

SULFOXYLATES (Soap Bleaches)

Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Jacques Wolfe & Co., Passaic, N. J.

SULFUR CANDLES

Koppers Co., White Tar Div., Kearny, N. J.
Reliable Chemical Co., Passaic, N. J.

SUPERFATTING AGENTS (for Toilet Soaps)

Alrose Chem. Co., Box 1294, Providence, R. I.
Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
N. I. Malmstrom Co., 147 Lombardy St., Bklyn.
M. Michel & Co., 90 Broad St., N. Y.
Nopeco Chem. Co., Harrison, N. J.
Pfaltz & Bauer, 350 5th Ave., N. Y.
Pylam Products Co., 799 Greenwich St., N. Y.
Richards Sales Corp., Jersey City, N. J.
Robinson Wagner Co., 110 E. 42nd St., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

SUPERHEATERS

Eureka Machine Co., 2601 Vega Ave., Cleveland
Ernest Scott & Co., Fall River, Mass.
The Superheater Co., 60 E. 42nd St., N. Y.

SURGICAL SOAPS (see Potash Soaps)

SWEEPING COMPOUNDS

A-1 Floor Sweep Co., 1923 N. Haskell, Dallas
American Excelsior Corp., 1000 N. Halstead St., Chicago
American Soap & Washoline Co., Cohoes, N. Y.
Banner Chemical Prod. Corp., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Matthews St., Rome, N. Y.
Philip Carey Mfg. Co., Lockland, Cincinnati
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Creco Co., Inc., Creco Bldg., Long Island City, N. Y.
Eagle Soap Corp., Huntington, Ind.
Filtrol Corp., 634 S. Spring St., Los Angeles
Fitch Dustdown Co., 801 S. Howard St., Baltimore
Fuld Bros., 702 S. Wolfe St., Baltimore
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Products Co., 932 W. 38th Place, Chicago
Klix Chem. Co., 2460 Third St., San Francisco
Kamen Soap Prods. Co., Woolworth Bldg., N. Y.
Frank Miller & Sons, 2240 W. 58th St., Chicago
Natl. Sawdust Co., 69 N. 6th St., Bklyn.
North Coast Soap & Chem. Wks., Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Pioneer Mfg. Co., Cleveland, O.
Port Huron Detergent Co., Port Huron, Mich.
Puritan Chem. Co., 209 Peters St., N. W. Atlanta
Riverside Chem. Co., N. Tonawanda, N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago

Sanco Prods. Inc., Greenville, O.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
E. B. Snyder Co., 2137 E. Harold St., Philadelphia
Jno. C. F. Snyder & Sons, Inc., 2304 N. 28th St., Phila.
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
Standard Chem. Co., 213 Jackson St., Houston, Tex.
Sweeping Compound Mnfrs. Co., 421 Broome St., N. Y.
Tesco Chem. Co., P. O. Box 4748, Atlanta
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

SYNTHETIC DETERGENTS (see Detergents, Synthetic)

SYNTHETIC INSECTICIDE CONCENTRATES (see Insecticide Concentrates, Synthetic)

SYNTHETIC WAXES (see Waxes, Synthetic)

TALC

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Binney & Smith Co., 41 E. 42nd St., N. Y.
Blue Ridge Talc Co., Henry, Va.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
E. I. du Pont de Nemours Co., Wilmington, Del.
Eastern Magnesia Talc Co., Burlington, Vt.
Enco Chem. Corp., 441 Lexington Ave., N. Y.
Fexandie & Sperrie, 205 Fulton St., N. Y.
Georgia Talc Co., Asheville, N. C.
Goris & Co., 8124 S. Hoyne Ave., Chicago
K. F. Griffiths & Co., 110 E. 42nd St., N. Y.
Hammill & Gillespie, 225 Broadway, N. Y.
Hercules Powder Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Los Angeles Talc Co., Los Angeles, Cal.
Natura Minerals Co., 108 W. 6th St., Los Angeles
Orbis Products Corp., 215 Pearl St., N. Y.
Pacific Coast Talc Co., Los Angeles, Cal.
R. F. Revson Co., 144 W. 18th St., N. Y.
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Rosenthal Bercow Co., 25 E. 26th St., N. Y.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
F. E. Schundler & Co., Joliet, Ill.
A. E. Starkie, 5461 W. Division St., Chicago
Tamma Silica Co., 228 N. La Salle St., Chicago
Union Talc Co., 147 Nassau St., N. Y.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Chas. A. Wagner Co., 813 Callowhill St., Phila.
Welch, Holme & Clark Co., Inc., 439 West St., N. Y.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.
Wyodak Chemical Co., 4600 E. 71st St., Cleveland

TALL OIL (TALLOL)

Arizona Chemical Co., 30 Rockefeller Plaza, New York
Brunswick Pulp & Paper Co., Brunswick, Ga.
Camp Manufacturing Co., Franklin, Va.
Champion Paper & Fibre Co., Canton, N. C.
Continental Can Co., Hummel-Ross Division, Hopewell, Va.
Gaylord Container Corp., 111 North Fourth St., St. Louis
Gulf States Paper Co., Tuscaloosa, Ala.
National Southern Products Corp., 630 Fifth Avenue, New York
Newport Industries, Inc., 230 Park Avenue, New York
North Carolina Pulp Co., Camden, N. J.
Southern Advance Bag & Paper Co., 38 Newbury St., Boston
Union Bag & Paper Corp., 52 Broadway, New York
West Virginia Pulp & Paper Co., 230 Park Ave., New York

TALLOW and GREASE

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
Belleview Rendering Co., Belleville, Ill.
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
Consolidated Rendering Co., 178 Atlantic Ave., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Independent Mfg. Co., Bridesburg P. O., Phila.
Long Island Soap Co., 29 Bridgewater St., Brooklyn
Louisville Butchers' Hide & Tallow Co., Louisville, Ky.
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago
Willibald Schaefer Co., Foot of Bremen Ave., St. Louis
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Swift & Co., Union Stock Yards, Chicago
Theobald Industries, Kearny, N. J.
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Wayne Soap Co., Detroit
Welch, Holme & Clark Co., Inc., 439 West St., N. Y.
Wilson & Co., Union Stock Yards, Chicago
Wilson-Martin Co., Swanson St., Phila.

TAR ACID OIL
for use in
DISINFECTANTS
and
CLEANING COMPOUNDS

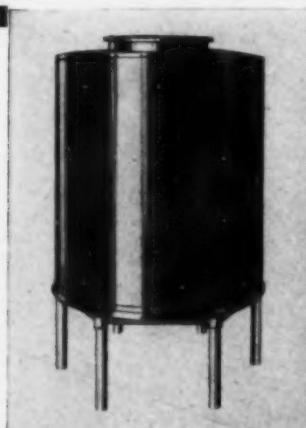
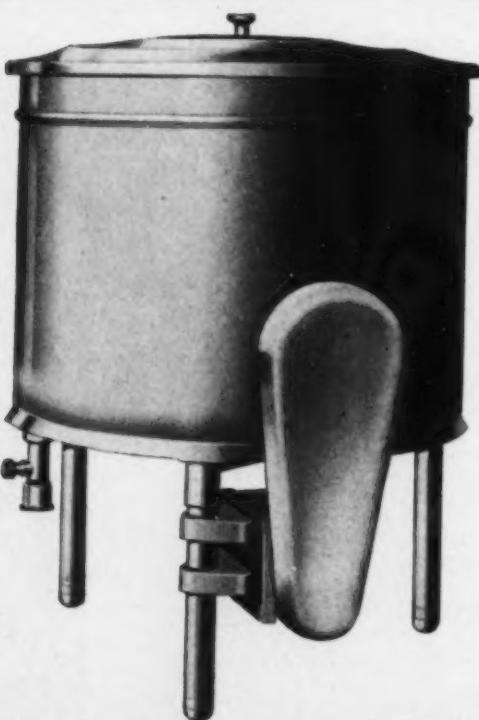
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TALLOW OIL

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
Consolidated Rendering Co., 40 N. Market St., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Griffin Chem. Co., 1000 16th St., San Francisco
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Independent Mfg. Co., Bridesburg, P. O., Phila
Swift & Co., Union Stock Yards, Chicago
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., Inc., 439 West St., N. Y.
West Coast Fert. & Rendering Co., Los Angeles
Wilson & Co., Union Stock Yards, Chicago

TANKS (Glass Lined Mixing and Storage)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Ertel Engineering Co., Kingston, N. Y.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
Littleford Bros., 453 E. Pearl St., Cincinnati
Metal Glass Products Corp., Belding, Mich.
Mixing Equipment Co., 1067 Garson Ave., Rochester
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Scientific Filter Co., 1 Franklin Sq., N. Y.
Sprout, Waldron & Co., Muncy, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)

TANKS (for Liquid Soap Dispensing Systems)

Ampion Corp., 4-88—Forty-seventh Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Bobrick Mfg. Corp., 1839 Blake Ave., Los Angeles
Brighton Copper Works, 2163 Western Ave., Cincinnati
Clifton Chemical Co., 62 William St., N. Y.
Bagle Soap Corp., Huntington, Ind.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
R. M. Hollingshead Corp., Camden, N. J.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Palmer Fixture Co., Waukesha, Wis.
Rochester Germicide Co., Rochester, N. Y.
John Trageser Steam Copper Works, Grand Ave.,
Maspeth, L. I., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
West Disinfecting Co., Long Island City, N. Y.

TANKS (Steel, Mixing, Storage, etc.)

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Alloy Prods. Corp., 221 Madison St., Waukesha, Wis.
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Atlas Steel Construction Co., Irvington, N. Y.
S. F. Bowser & Co., Ft. Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Wks., Edge Moor, Del.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y. (Used)
William Garrigue & Co., 9 S. Clinton St., Chicago
General American Transportation Corp., 135 S. LaSalle St., Chicago
Graver Tank & Mfg. Corp., 332 S. Michigan, Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Illinois Steel Corp., 208 S. LaSalle St., Chicago
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
J. M. Lehmann Co., Lyndhurst, N. J.
Littleford Bros., 453 E. Pearl St., Cincinnati
Lukens Steel Corp., Coatesville, Pa.
Mixing Equipment Co., 1067 Garson Ave., Rochester

Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)

Patterson Foundry & Machine Co., East Liverpool, Ohio
Patterson-Kelley Co., East Stroudsburg, Pa.
Petroleum Iron Works, Sharon, Pa.
Pfahler Cleland Co., Galion, O.
Pfaudler Co., Rochester, N. Y.
Pioneer Tank & Boiler Co., Tulsa, Okla.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy Co., York, Pa.
Geo. G. Rodgers Co., 225 W. 34th St., N. Y.
Sprout, Waldron & Co., Muncy, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
Struthers-Wells Corp., Warren, Pa.
John Trageser Steam Copper Works, Grand St.,
Maspeth, L. I., N. Y.

TANKS (Wooden, Mixing, Storage, etc.)

Atlantic Tank & Barrel Co., North Bergen, N. J.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
General Tank Corp., 30 Church St., N. Y.
Hauser-Stander Tank Co., Ivorydale, Cinn.
H. D. Hudson Mfg., 589 E. Illinois St., Chicago
Kalamazoo Tank & Silo Co., Kalamazoo, Mich.
New England Tank & Tower Co., Everett, Mass.
Pacific Tank & Pipe Co., 334 Market St., San Francisco
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy. Co., York, Pa.
Sprout, Waldron & Co., Muncy, Pa.
Tippett & Wood, Phillipsburg, N. J.

TAR ACID OIL (see Coal Tar Raw Materials)

TAR ACIDS, High Boiling

American-British Chem. Supplies, Inc., 180 Madison Ave., N. Y.
Baird & McGuire, Inc., Holbrook, Mass.
Barrett Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Coal Tar Chemicals Corp., 420 Lexington Ave., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
James Huggins & Son, 239 Medford St., Malden, Mass.
Wm. E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Mirvale Chem. Co., Ltd., Mirfield, Yorks, England
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Neville Co., Pittsburgh
Reilly Tar & Chem. Co., Indianapolis
Shell Oil Co., 50 W. 50th St., N. Y.
James Varley & Sons, 1200 Switzer Ave., St. Louis

TERPENYL ACETATE (see Aromatic Chemicals)

TERPINEOL

(see also Essential Oils)

van Ameringen-Haebler, Inc., 315 Fourth Ave., N. Y.
Aromatic Products, Inc., 15 E. 30th St., N. Y.
Crosby Chemicals, Inc., DeRidder, La.
Dodge & Olcott Inc., 180 Varick St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Felton Chemical Co., 603 Johnson Ave., Brooklyn, N. Y.
Firmenich & Co., 250 W. 18th St., N. Y.
Benj. French, Inc., 160 Fifth Ave., N. Y.
General Drug Co., 644 Pacific St., Brooklyn
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.

TETRACHLORETHYLENE (see Solvents, Organic)

TETRASODIUM PYROPHOSPHATE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Blockson Chemical Co., Joliet, Ill.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y. 6

TETRASODIUM PYROPHOSPHATE (Contd.)

E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
A. R. Maas Chem. Co., South Gate, Calif.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Philipp Bros., 37 Wall St., N. Y.
Victor Chem. Wks., 141 W. Jackson Blvd., Chicago
Welch, Holme & Clark Co., 439 West St., N. Y.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.

TEXTILE SOAPS

Alrose Chem. Co., Box 1294, Providence, R. I.
American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Carlstadt Chem. Co., Carlstadt, N. J.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Clifton Chemical Co., 62 William St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Delta Chem. Co., 4 Payson Ave., N. Y.
J. O. Draper Co., Pawtucket, R. I.
E. I. du Pont de Nemours Co., Wilmington, Del.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Haag Labs., 140th & Seeley Ave., Blue Island, Ill.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Arnold Hoffman & Co., Providence, R. I.
Hysan Prods. Co., 932 W. 38th Place, Chicago
Iowa Soap Co., 810 Valley St., Burlington, Ia.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Laurel Soap Mfg. Co., Tioga St., Phila.
Long Island Soap Co., Meeker Ave. & Bridgewater St.,
Brooklyn, N. Y.
Los Angeles Soap Co., Los Angeles, Cal.
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Nopco Chem. Co., Harrison, N. J.
National Soap Co., 357 South 26th St., Tacoma, Wash.
Newell Gutradi & Co., 350 Fremont St., San Francisco
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Rome Soap Mfg. Co., Rome, N. Y.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Scholler Bros., 3301 Amber St., Philadelphia
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Geo. E. Sherman Co., 153 Classon Ave., Brooklyn, N. Y.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Union Stock Yards, Chicago
Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Ultra Chem. Wks., Inc., 2 Wood St., Paterson, N. J.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Warwick Chem. Co., West Warwick, R. I.
M. Werk Co., St. Bernard, Cincinnati
Jacques Wolf & Co., Passaic, N. J.
G. H. Wood & Co., Toronto, Ont., Canada
Chas. W. Young & Co., 1247 N. 26th St., Phila.

TEXTILE SODA (see Soda)

TEXTILE SPECIALTIES (Oils, softeners, etc.)

Alrose Chem. Co., Box 1294, Providence, R. I.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Atlas Powder Co., Wilmington, Del.
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
J. O. Draper Co., Pawtucket, R. I.
E. I. du Pont de Nemours Co., Wilmington, Del.
Emery Industries, Inc., Carew Tower, Cincinnati

Emulsol Corp., 59 E. Madison St., Chicago
Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Franklin Research Co., 5134 Lancaster Ave., Phila.
Geigy Co., 89 Barclay St., New York
General Dyestuff Corp., 435 Hudson St., N. Y.
Glyco Products Co., 26 Court St., Bklyn., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Hercules Powder Co., Wilmington, Del.
Arnold Hoffman & Co., Providence, R. I.
Laurel Soap Mfg. Co., Tioga St., Phila., Pa.
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chemical Co., P.O. Box 118, Milltown, N. J.
Naphthole, Inc., 15 E. 26th St., N. Y.
National Aniline Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Nopco Chem. Co., Harrison, N. J.
National Soap Co., 357 South 26th St., Tacoma, Wash.
National Starch Prods. Co., 820 Greenwich St., N. Y.
Pennsylvania Refining Co., Butler, Pa.
Rumford Chem. Works, Rumford, R. I.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Scholler Bros., 3301 Amber St., Philadelphia
Seaboard Distributors, 60 Park Pl., Newark, N. J.
Geo. E. Sherman Co., 153 Classon Ave., Brooklyn, N. Y.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Ultra Chem. Works, Inc., 2 Wood St., Paterson, N. J.
Washine-National-Sands, Inc., 37-02 Northern Blvd.,
Long Island City
Warwick Chem. Co., West Warwick, R. I.
Woburn Chemical Corp., Harrison, N. J.
Jacques Wolf & Co., Passaic, N. J.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

THALLIUM SULFATE

Foote Mineral Co., 1609 Summer St., Phila.
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350-5th Ave., N. Y.
Rosenthal Bercow Co., 25 E. 26th St., N. Y.

THEATRE SPRAYS

Albert Albek, Inc., 515 S. Fairfax Ave., Los Angeles
Antiseptol Co., 5524 Northwest Highway, Chicago
Associated Chemists Inc., 1906 N. Halsted, Chicago
Banner Chemical Prod. Corp., 60 Elm St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Brilco Labs., 947-61st, Bklyn.
Cenol Co., 4250 Pulaski Ave., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & West Sts., Balto.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 62 William St., N. Y.
Delta Chem. Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chemical Co., 135 Mississippi St., San Francisco
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 932 W. 38th Place, Chicago
Imperial Prods. Co., 1600 Fontain St., Phila.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Lewis Soap & Chem. Co., Oakland, Cal.
Lorenz Chemical Co., 135 N. 32nd Ave., Omaha
Midland Labs., Dubuque, Ia.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Perry Bros., Inc., 220 Flushing Ave., Brooklyn
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Sanitary Prods. Co., 874 Seward St.,
Rochester, N. Y.
Selig Co., 336 Marietta St., Atlanta, Ga.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Tech Soap Co., 125 W. 46th Pl., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta

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Texas Soap Mfg. Corp., 4905 Calhoun Rd., Houston
Texol Chem. Wks., 3 Winter St., Worcester, Mass.
J. A. Tumbler Labs., 423 Hanover St., Hanover
Uncle Sam Chemical Co., 573 W. 131st St., N. Y. C.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
Victory Chem. Co., 148 Fairmount Ave., Phila.
G. H. Wood & Co., Toronto, Ont., Canada
World Spray Co., Inc., 5117 Central Ave., Los Angeles
York Chemical Co., 23 Dean St., Bklyn.

Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles, Cal.
Nopco Chem. Co., Harrison, N. J.
Peck's Products, 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Swift & Co., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOILET SOAP MILLS (see Soap Machinery)

TOILET SOAPS (Private Label)

Armour Soap Wks., 1355 W. 31st St., Chicago
Arrow Laboratories, 236 W. North Ave., Chicago
Baum's Castorine Co., Rome, N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. LaSalle St., Chicago
J. Eavenson & Sons, Del & Penn Sts., Camden, N. J.
James Good Co., Susquehanna Ave. & Martha St., Phila.
The Haag Lab., Inc., P.O. Box 114, Blue Island, Ill.
Hewitt Soap Co., Dayton, O.
Long Island Soap Co., 29 Bridgewater St., Brooklyn
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles, Cal.
National Soap Co., Box 1613, Tacoma, Wash.
Newell, Gutradt Co., 350 Fremont St., San Francisco
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Products, 610 E. Clarence Ave., St. Louis
Procter & Gamble, Cincinnati
Schmidt Soap Products Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge,
Mass.
M. Werk Co., St. Bernard, Cincinnati
Wolf Creek Soap Co., Dayton, Ohio
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOOTH PASTE (Private Label)

Corn King Co., Cedar Rapids, Ia.
R. Gesell, Inc., 200 W. Houston St., N. Y.
McKesson & Robbins, 3674 3rd Ave., N. Y.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Strong Cobb & Co., Cleveland
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOWELS, PAPER (see Paper Towels)

TRICHLORBENZENE (see Solvents, Organic)

TRICLORETHYLENE (see Solvents, Organic)

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Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.

TRIETHANOLAMINE SOAPS

Alrose Chem. Co., Box 1294, Providence, R. I.
Chem. Mfg. & Dist. Co., Easton, Pa.
Chem. Service Co. of Balto., Howard & Fast Sts., Balto.
Clifton Chemical Co., 62 William St., N. Y.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Davies-Young Soap Co., Dayton, O.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Griffin Chem. Co., 1000 16th St., San Francisco
Hysan Prods. Co., 932 W. 38th Place, Chicago
Kranich Soap Co., 60 Richards St., Bklyn.
Nopco Chem. Co., Harrison, N. J.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia

THERMOMETERS (see Instruments)

THYME OIL (see Essential Oils)

THYMOL (see Aromatic Chemicals)

TIGHT WRAPPING MACHINERY (see Wrapping Machinery)

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American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Metal & Thermit Corp., 120 Broadway, N. Y.

TITANIUM OXIDE (for toilet soaps)

Chemical & Pigment Co., St. Helena, Baltimore
E. I. du Pont de Nemours Co., Wilmington, Del.
Foote Mineral Co., 1609 Summer St., Phila.
Titanium Pigment Co., 111 Broadway, N. Y.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Whittaker, Clark & Daniels, 260 W. Bdway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

TOILET PAPER

Brown Co., Portland, Me.
Hoberg Paper & Fibre Co., Green Bay, Wis.
Scott Paper Co., Chester, Pa.
Straubel Paper Co., Green Bay, Wis.
U. S. Envelope Co., Lititz, Pa.
Victoria Paper Mills Co., Fulton, N. Y.

TOILET PREPARATIONS (Private Label)

(see also Bath Salts, Shampoos, etc.)

Allied Products, Inc., Suffern, N. Y.
Corn King Co., Cedar Rapids, Ia.
R. Gesell, Inc., 200 W. Houston St., N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Perry Bros., Inc., 220 Flushing Ave., Brooklyn
Richards Sales Corp., Warren & Morris Sts., Jersey City, N. J.
Schmidt Soap Products Co., 236 W. North Ave., Chicago
Shores Co., Cedar Rapids, Ia.
John T. Stanley Co., 642 W. 30th St., N. Y.
G. H. Wood & Co., Toronto, Ont., Canada
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOILET SEAT COVERS

Loreo Industries, Clarke & Hornet Sts., Cincinnati
Morton Mfg. Co., 5105 W. Lake St., Chicago
National Towel Bendon Ltd., 12 Stewart St., San Francisco
Sani-Gard Cover Co., 411 W. 5th St., Los Angeles

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(see also Brokers and Dealers)

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Blockson Chemical Co., Joliet, Ill.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Emeryville Chem. Co., 405 Montgomery St., San Francisco
General Chemical Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
A. R. Maas Chem. Co., South Gate, Calif.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Philipp Bros., 37 Wall St., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Works, 141 W. Jackson Blvd., Chicago
Virginia-Carolina Chemical Corp., Richmond, Va.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Welch, Holme & Clark Co., 439 West St., N. Y.

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G. B. Lewis Co., Watertown, Wise.
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Aluminum Company of America, Gulf Bldg., Pittsburgh
Art Tube Co., Irvington, N. J.
Bond Penn Tube Co., 501 Monroe St., Wilmington, Del.
Consolidated Fruit Jar Co., New Brunswick, N. J.
Globe Collapsible Tube Corp., 28 Columbia Heights, Brooklyn, N. Y.
Hygienic Tube Co., 34 Ave. L., Newark, N. J. (Celluloid)
National Collapsible Tube Co., Providence, R. I.
New England Collapsible Tube Co., New London, Conn.
Peerless Tube Co., Bloomfield, N. J.
Sun Tube Corp., Hillside, N. J.
Victor Metal Products Corp., Brooklyn, N. Y.
White Metal Mfg. Co., 1012 Grand St., Hoboken, N. J.
Wilco Co., 6800 McKinley Ave., Los Angeles
A. H. Wirz, Inc., Chester, Pa.

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TUBES (Transparent Celluloid)

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E. W. Colledge, General Sales Agent, P. O. Box 389, Jacksonville, Fla.
Continental Turp. & Rosin Corp., Laurel, Miss.
Crosby Chemicals, Inc., DeRidder, La.
Dixie Pine Prods. Co., Hattiesburg, Miss. (wood)
Georgia Rosin Prods. Co., Brunswick, Ga.
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Unit of Union Carbide and Carbon Corporation



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In Canada: Carbide and Carbon Chemicals, Ltd., Toronto 1

TURPENTINE (Contd.)

Newport Industries, Inc., 230 Park Ave., N. Y.
Phoenix Naval Stores Co., Gulfport, Miss (wood)
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Taylor, Lowenstein & Co., Mobile, Ala.

URINAL BLOCKS (see Deodorizing Blocks)

USED MACHINERY AND EQUIPMENT

Allied Steel & Equipment Co., 1007 Springfield Ave., Irvington, N. J.
Brill Equipment Corp., 183 Varick St., N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y.
Emsco Equipment Co., 39 Hyatt Ave., Newark, N. J.
J. L. Ferguson Co., Joliet, Ill.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
First Machy. Corp., 157 Hudson St., N. Y.
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 265 46th St., Brooklyn
J. M. Lehmann Co., Lyndhurst, N. J.
Machinery & Equipment Co., 533 W. Broadway, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Prater Pulverizing Co., 1825 S. 55th Ave., Chicago
Stein Equipment Co., 90 West St., N. Y. (Used)
Weigh Right Automatic Scale Co., 404 Grant Ave., Joliet, Ill.

VACUUM CLEANERS (Heavy Duty)

Fay Co., 279 5th Ave., N. Y.
Hild Floor Machine Co., 1313 W. Randolph St., Chicago
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Multi-Clean Prods., 2277 Ford Pkwy., St. Paul
Rex-Cleanwall Corp., Brazil, Ind.
Sprayer Corp. of America, 1712 Payne St., Evanston, Ill.

VANILLIN

(see also Essential Oils)

Aromatic Products, Inc., 15 E. 30th St., N. Y.
Dodge & Olcott Inc., 180 Varick St., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
Felton Chemical Co., 603 Johnson Ave., Brooklyn, N. Y.
Fries Bros., 90 Reade St., N. Y.
General Drug Co., 644 Pacific St., Brooklyn
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Maywood Chemical Co., Maywood, N. J.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis, Mo.
Schimmel & Co., 601 W. 26th St., N. Y.
Verona Chemical Co., Verona Ave., Newark, N. J.

VENDING MACHINES

Acme Cotton Products Co., 245—5th Ave., N. Y.
(Sanitary Napkin)
Brown Co., Portland, Me. (Soap and Taper Towel)
Hospital Specialty Co., 41 Union Sq., N. Y. (Sanitary Napkin)
Rochester Germicide Co., Rochester, N. Y. (Sanitary Napkins)
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

VETIVERT OIL (see Essential Oils)

VOLCANIC ASH (see Abrasives and Fillers)

WASHING MACHINERY (Bottles and Jars)
Allied Steel & Equipment Co., 1007 Springfield Ave., Irvington, N. J.
Alsop Engineering Corp., 103 Green St., Milldale, Conn.
Barry-Wehmiller Machinery Co., 4660 W. Florissant Ave., St. Louis
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Filter Paper Co., 2464 S. Mich. Ave., Chicago

First Machy. Corp., 157 Hudson St., N. Y. (Used)
Hornney & Co., 420 Lexington Ave., N. Y.
Karl Kiefer Machine Co., 919 Ma. tin St., Cincinnati, O.
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago (Used)

Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Mach. Co., Philadelphia, Pa.
U. S. Bottlers Machinery Co., 4025 N. Rockwell St., Chicago
Weigh Rite Automatic Scale Co., Joliet, Ill.

WASHING MACHINERY (For cleaning drums and barrels)

Allied Steel & Equipment Co., 1007 Springfield Ave., Irvington, N. J.
F. Aue & Co., 171 Beebe Ave., Long Island City, N. Y.
Eureka Machine Co., 2061 Vega Ave., Cleveland
Charles E. Farrington, Phoenixville, Pa.
Harnischfeger Corp., 4400 W. National Ave., Milwaukee
Vol-U-Meter Co., 707 Ohio St., Buffalo

WASHING POWDERS (see Cleaning Compounds)

WASTE RECEPTACLES (see Pails, Steel)

WATER CONDITIONING EQUIPMENT

Permutit Co., 330 W. 42nd St., N. Y.

WATER GLASS (see Sodium Silicate)

WATER SOFTENERS

Alrose Chem. Co., Box 1294, Providence, R. I.
Allied Industrial Prods. Co., 620 N. Michigan, Chicago
Amer. Agricultural Chem. Co., 50 Church St., N. Y.
American Cyanamid & Chemical Corp., 80 Rockefeller Plaza, N. Y.
American Doucil Co., 125 S. 3rd St., Philadelphia
Antara Prods. Div., Gen. Aniline & Film Corp., 444 Madison Ave., N. Y.
Baum's Castorine Co., Rome, N. Y.
Blockson Chemical Co., Joliet, Ill.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Corn King Co., Cedar Rapids, Ia.
Filter Paper Co., 2464 S. Michigan Ave., Chicago
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City
General Drug Co., 644 Pacific St., Brooklyn
General Dyestuff Corp., 435 Hudson St., N. Y.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Calif.
A. R. Maas Chem. Co., South Gate, Calif.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Mathieson Chemical Co., 30 E. 42nd St., N. Y.
Miranol Chem. Co., P. O. Box 118, Milltown, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Permutit Co., 330 W. 42nd St., N. Y.
Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rumford Chem. Works, Rumford, R. I.
Shores Co., Cedar Rapids, Ia.
Skotch Prods. Corp., 2710 Detroit Ave., Cleveland
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector St., N. Y.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.

WATER STILLS (Automatic)

International Filter Co., 325 W. 25th Pl., Chicago
F. J. Stokes Machine Co., Tabor Rd., Phila., Pa.

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VELATRUM*

PARALATRUM*

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WAX APPLICATORS (see Applicators)

WAXES (Carnauba, Candelilla, Montan, etc. Do not confuse with floor wax)

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American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Avon Trading Co., 401 Bdway, N. Y.
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
E. A. Bromund Co., 256 Broadway, N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Concord Chem. Co., Independence Sq., Phila.
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Cornelius Prods. Co., 432 4th Ave., N. Y.
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
Distributing & Trading Co., 444 Madison Ave., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Industrial Raw Materials Corp., 52 Wall St., N. Y.
Innis, Speiden & Co., 117 Liberty So., N. Y.
International Wax Refining Co., 4415—3rd Ave., B'klyn
W. & A. Leaman, 17 State St., N. Y.
Lenape Trading Co., 233 Broadway, N. Y.
George H. Lincks, 155 John St., N. Y.
Muench-Kreuzer Candle Co., Syracuse, N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
Petrolite Corp., Ltd., 30 Broad St., N. Y.
R. J. Prentiss & Co., 110 William St., N. Y.
R. F. Revson Co., 144 W. 18th St., N. Y.
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Frank B. Ross Co., 507—8th St., Hoboken, N. J.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
William H. Scheel, Inc., 38 Franklin St., Bklyn.
Standard Oil Co., (Calif.), 225 Bush St., San Francisco
A. E. Starkie, 5461 W. Division St., Chicago
F. W. Steadman Co., 59 Pearl St., N. Y.
Strahl & Pitsch, 141 Front St., N. Y.

Strohmeyer & Arpe, 139 Franklin St., N. Y.
Twin City Shellac Co., 340 Flushing Ave., Brooklyn
Warwick Chem. Co., W. Warwick, R. I.
Will & Baumer Candle Co., Syracuse, N. Y.
G. S. Ziegler & Co., 233 Bdway, N. Y.

WAXES, Floor and Polishing (see Floor Waxes)

WAXES, Synthetic

Allied Asphalt & Mineral Corp., 217 Broadway, N. Y.
Armour Chem. Div., Armour & Co., 1355 W. 31st St., Chicago
Atlas Powder Co., Wilmington, Del.
Avon Trading Co., 401 Bdway., N. Y.
Bakelite Corp., 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Concord Chem. Co., Independence Sq., Phila.
T. G. Cooper & Co., Cedar & Venango Sts., Phila.
Cornelius Prods. Co., 386 4th Ave., N. Y.
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
E. I. du Pont de Nemours Co., Wilmington, Del.
General Dyestuffs Corp., 435 Hudson St., N. Y.
Glyco Products Co., 26 Court St., Bklyn., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
International Wax Refining Co., 4415—3rd Ave., B'klyn
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Nopco Chem. Co., Harrison, N. J.
Oil States Pet. Co., 233 Broadway, N. Y.
Petrolite Corp., Ltd., 30 Broad St., N. Y.
Pennotex Oil Corp., 29 Broadway, N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Wm. H. Scheel, Inc., 38 Franklin St., Bklyn., 22
Sherwood Refining Co., Englewood, N. J.
F. W. Steadman Co., 59 Pearl St., N. Y.

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Strahl & Pitsch, 141 Front St., N. Y.
Van Dyk & Co., Belleville, N. J.
Warwick Chemical Co., 580 5th Ave., N. Y.
G. S. Ziegler & Co. 233 Broadway, New York

WEED KILLERS (2, 4-D, etc.)

American Chem. Paint Co., Ambler, Pa.
J. T. Baker Chemical Co., Phillipsburg, N. J.
Chem. Service Co. of Balto, Howard & West Sts., Balto.
Chipman Chem. Co., Bound Brook, N. J.
Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Fuld Bros., 702 S. Wolfe St., Baltimore
General Chem. Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
James Good Co., Susquehanna Ave. & Martha St., Phila.
Goulard & Olena, 140 Liberty St., N. Y.
Imperial Prods. Co., 1600 Fontain St., Phila.
J. F. Kerns Chem. Prods., 2239 S. Michigan Ave.,
Chicago
Koiker Chemical Works, 80 Lister Ave., Newark 5, N. J.
Koppers Co., Pittsburgh
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
Penn Salt Mfg. Co., Widener Bldg., Phila.
James Varley & Sons, 1200 Switzer Ave., St. Louis
York Chemical Co., 23 Dean St., Brooklyn.

WEIGHING EQUIPMENT (Automatic)

J. L. Ferguson Co., Joliet, Ill.
B. F. Gump Co., 412 S. Clinton St., Chicago
S. Howes Co., Silver Creek, N. Y.
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.
Pneumatic Scale Corp., North Quincy, Mass.
Read Machy. Co., York, Pa.
Stein Equipment Co., 90 West St., N. Y. (Used)
F. J. Stokes Machine Co., Phila, Pa.
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
Triangle Package Machinery Co., 906 N. Spaulding Ave.,
Chicago
Vol-U-Meter Co., 710 Ohio St., Buffalo, N. Y.
Weigh Right Automatic Scale Co., Joliet, Ill.

WETTING AGENTS (see also Detergents, Synthetic, and Sulfonated Oils)

Alrose Chem. Co., Box 1294, Providence, R. I.
American Cyanamid & Chemical Corp., 30 Rockefeller
Plaza, N. Y.
Antara Prods. Div., Gen. Aniline & Film Corp., 444
Madison Ave., N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Atlas Powder Co., Wilmington
Borne Scrymser Co., 632 S. Front St., Elizabeth, N. J.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Carlstadt Chem. Co., Carlstadt, N. J.
Chem. Mfg. & Dist. Co., Easton, Pa.
E. I. du Pont de Nemours Co., Wilmington, Del.
Emery Industries, 4300 Carew Tower, Cincinnati
Emulsol Corp., 59 E. Madison Ave., Chicago
Gaylord Chem. Co., 701 Woodswether Rd., Kansas City
General Dyestuff Corp., 435 Hudson St., N. Y.
Griffin Chem. Co., 1000 16th St., San Francisco
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Hercules Powder Co., Wilmington, Del.
Imperial Prods. Co., 1600 Fontain St., Phila.
Maywood Chem. Wks., Maywood, N. J.
M. Michel & Co., 90 Broad St., N. Y.
Miranol Chem. Co., P. O. Box 118, Milltown, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
National Aniline Div., Allied Chem. & Dye Corp., 40
Rector St., N. Y.
Nopco Chem. Co., Harrison, N. J.
Oronite Chem. Co., 200 Bush St., San Francisco
Procter & Gamble Co., Cincinnati
Publicker Industries, 1429 Walnut St., Phila.
Richards Sales Corp., Jersey City, N. J.

WETTING AGENTS (Contd.)

Robinson Wagner Co., 110 E. 42nd St., N. Y.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
E. B. Snyder Labs., 2137 E. Harold St., Philadelphia
Sharples Chemicals, Inc., 1235 Broad St., Phila.
Solvay Sales Div., Allied Chem. & Dye Corp., 40 Rector
St., N. Y.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Ultra Chemical Works, 2 Wood St., Paterson, N. J.
Van Dyk & Co., Belleville, N. J.
Victor Chem. Works, 141 W. Jackson Blvd., Chicago
Jacques Wolfe & Co., Passaic, N. J.

WHALE OIL

(see also Brokers and Dealers)

F. A. Marsily & Co., 15 Whitehall St., N. Y.
Murray Oil Prods. Co., 21 West St., N. Y.
J. H. Redding Co., 17 Battery Pl., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Arthur C. Trask Co., 4103 S. LaSalle St., Chicago
Welch, Holme & Clark, Inc., 439 West St., N. Y.
Wilbur-Ellis Co., 17 Battery Pl., N. Y.

WHALE OIL SOAPS

(see also Fish Oil Soaps)

Crystal Soap & Chem. Co., 6300 State Rd., Philadelphia
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Nopeco Chem. Co., Harrison, N. J.
Newell, Gutradt Co., 350 Fremont St., San Francisco
National Soap Co., Box 1613, Tacoma, Wash.
North Coast Chemical & Soap Works, Seattle, Wash.
Peck's Prods. Co., 610 E. Clarence Ave., St. Louis
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St.,
Chicago
Werner G. Smith Co., 2191 W. 110th St., Cleveland

WHITE MINERAL OILS

Atlantic Refining Co., 260 S. Broad St., Philadelphia
Oil States Pet. Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler, Pa.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
Sherwood Refining Co., Englewood, N. J.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Stanco Distributors, Inc., 216 W. 14th St., N. Y.
Standard Oil Co., (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
F. W. Steadman Co., 59 Pearl St., N. Y.

WHITING (see TALC)

WINDSHIELD CLEANERS, (see Glass and Windshield
Cleaners)

WOOD FLOUR

Becker Moore & Co., N. Tonawanda, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
D. H. Litter Co., 242 W. 55th St., N. Y.
Frank Miller & Sons, 2250 W. 58th St., Chicago
Natl. Sawdust Co., 69 N. 6th St., Bklyn.
Witco Chemical Co., 295 Madison Ave., N. Y.
Wood Flour, Inc., Winchester, N. H.

WOOL GREASE (see Lanolin)

WRAPPING MACHINERY

Allied Steel & Equipt. Co., 1007 Springfield Ave., Irvington, N. J.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
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J. M. Lehmann Co., Lyndhurst, N. J.
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Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
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Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
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Stein Equipment Co., 90 West St., N. Y. (Used)
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Aurelio Tanzi Engineering Co., 430 Jefferson St., Bklyn.

ZINC NAPHTHENATE

Baker & Collinson, Detroit
Cuprinol Inc., 7 Water St., Boston
General Petroleum Corp of Calif., 108 W. 2nd St., Los Angeles
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Nuodex Products Co., 312 Division St., Elizabeth, N. J.

ZINC OXIDE

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Anaconda Sales Co., E. Chicago, Ind.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Chas. B. Chrystal Co., 53 Park Pl., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
Eagle-Picher Lead Co., 134 N. LaSalle St., Chicago
Harshaw Chem. Co., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Rahway, N. J.
Monsanto Chemical Co., 1700 S. 2nd St., St. Louis
New Jersey Zinc Co., 160 Front St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Rosenthal-Bercow Co., 25 E. 26th St., N. Y.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Western Zinc Oxide Co., Leadville, Col.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.

APPROXIMATE CONSTANTS OF SOAP OILS

Oil or Fat	S. Gr. (Water at 15°)	Sap. No.	Iodine Value	Ther. °C.	% Non-Sap.
					3°— 0.3—0.5%
Castor Oil	0.958—0.968	177—187	83—86	3°—	
Coconut Oil	0.926	251—263	8—10	20°—23°	0.2
Corn Oil	0.921—0.927	186—193	120—130	15°—19°	1.5—3.0%
Cottonseed Oil	0.915—0.926	191—196	103—115	32°—38°	0.7—1.6%
Linseed Oil	0.931—0.938	189—196	170—204	19°—21°	0.5—1.6%
Olive Oil Fruits	0.914—0.919	189—195	79—86	17°—21°	2.0—3.0%
Palm Oil	0.921—0.925	196—205	48—58	42°—45°	0.7—1.0%
Palm Kernel Oil	0.873/99°	244—255	16—23	20°—25°	0.2—0.5%
Peanut Oil	0.911—0.926	185—192	83—95	28°—30°	0.5—1.0%
Sesame Oil	0.920—0.926	188—193	103—115	21°—24°	1.0—1.8%
Soya Bean Oil	0.922—0.925	191—194	125—140	21°—24°	0.3—0.6%
Tallow (beef)	0.943—0.952	193—200	35—47	43°—45°	
Whale Oil	0.922—0.926	188—194	110—150	22°—24°	1.0—3.0%

FATTY ACIDS IN SOAP OILS

Glycerides of Acids	Coconut Oil	Cottonseed Oil	Linseed Oil	Olive Oil	Palm Oil	Palm Kernel Oil	Peanut Oil	Sesame Oil	Soyabean Oil	Tallow	Whale Oil
Arachidic	—	0.4	0.6	—	0.2	—	—	3.6	4.0	0.7	—
Lignoceric	—	0.2	—	—	0.1	—	2.9	0.4	0.1	—	—
Linolenic	—	—	34.1	—	—	—	—	—	—	2.2	—
Linoleic	—	39.1	42.0	48.5	3.9	9.5	1.0	23.1	35.2	49.3	20.0
Myristic	20.0	—	0.4	—	Trace	0.6	16.0	—	—	—	2.0
Oleic	2.0	43.4	35.0	5.0	83.1	43.2	16.5	56.7	46.0	32.0	44.5
Palmitic	7.0	7.3	20.0	2.7	9.2	44.0	6.5	7.3	7.3	6.5	29.0
Palmitoleic	—	—	—	—	—	—	—	—	—	—	17.0
Stearic	5.0	3.3	2.0	5.4	2.0	2.9	1.0	5.5	4.4	4.2	24.5

Coconut oil also contains 10% Capric, 2% Caproic, 9% Caprylic and 45% Lauric. Palm Kernel Oil contains 6% Capric, 1% Caprylic and 50% Lauric. Whale Oil contains 18% Clupandonic.





a record of proven performance

You have seen these ads before. You have seen these superior perfume oils and compounds achieve highly saleable success in finished products.

They represent but a few instances of the Florasynth pattern of furnishing materials of proven performance as a primary step in creating successful consumer products.



CHICAGO 6 • NEW YORK 61 • LOS ANGELES 13

DALLAS 1 • DETROIT 2 • MEMPHIS 1 • NEW ORLEANS 13

ST. LOUIS 2 • SAN BERNARDINO • SAN FRANCISCO 11

Florasynth Labs. (Canada Ltd.) — Montreal • Toronto • Vancouver • Winnipeg

Florasynth Laboratorios de Mexico S. A. — Mexico City

The advertisement features a collage of several vintage perfume advertisements from the 1940s and 1950s. One prominent ad at the bottom left is for "ELAN TIBET Savon", showing a hand holding a bar of soap. Another ad above it shows a woman's face with the word "Tango". To the right is an ad for "Shalimar" with a woman's face. Other smaller ads include "JASMIN" and "Tango". The background is dark and textured, with some faint, stylized signatures or initials visible.



Florasynth

offers materials which have, through the years, made their mark in the creation of highly successful products in the SOAP Industry.

SYNTHETIC ESSENTIALS AND AROMATIC CHEMICALS FOR SOAP

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CEDARPINE No. 200	ORANGE BLOSSOM NO. 600
ELAN TIBET SAVON NO. 450	ORIENTODOR NO. 400
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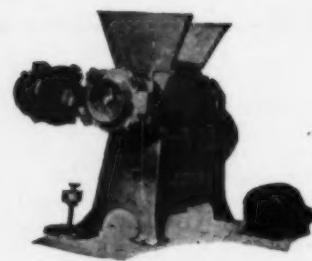
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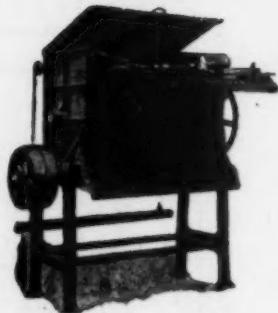
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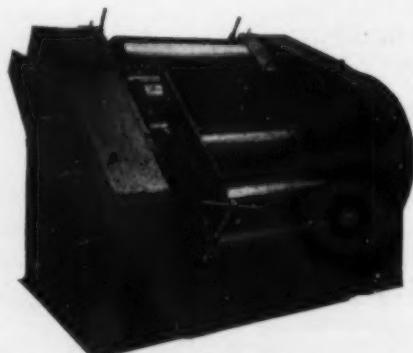
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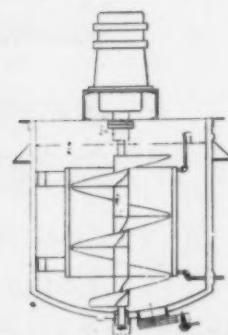
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1947 Soap Fat and Oil Use

A NEAR-RECORD total of 2,126,636,000 pounds of primary animal and vegetable fats and oils was reported consumed for soap in 1947, an increase of about 30 per cent over the previous year, and second largest consumption figure on record. The 1947 figure, as yet only preliminary, and based on the total of preliminary figures for the four quarters of the year, is second only to 1941, when 2,143,857,000 pounds of primary fats and oils were consumed. A total of 238,919,000 pounds of secondary animal and vegetable fats and oils was reported used for soap during 1947, according to figures published by the Bureau of the Census of the U. S. Department of Commerce, Washington, D. C.

Consumption of oils and fats for soap reached its highest point during the fourth quarter of 1947, when 610,442,000 pounds were reported used. In the first three months of the year, 526,449,000 pounds were reported used, making it the second largest quarter for 1947. Dropping to 480,999,000 pounds in the second quarter of the year, reported consumption in the third quarter rose to 509,145,000 pounds.

Accounting for the big gain in fat consumption in 1947, as compared with the previous year, were the sizable increases in the amounts of coconut oil and inedible tallow reported consumed. Better than 50 per cent of all of the fats and oils used was inedible tallow, whose total use in soap for the year was 1,109,005,000 pounds. In 1946, 871,968,000 pounds of inedible tallow were reported consumed for soaps. Grease consumption which totaled 337,871,000 pounds in 1946, advanced to 416,838,000 pounds in 1947, according to the Department of Commerce figures.

Coconut oil use in soap during 1947 was at the highest level in many years. Last year 511,331,000 pounds of coconut oil were reported

consumed for soap, while in the previous year the figure was 184,906,000 pounds. In 1941, 484,124,000 pounds of coconut oil were used in soap.

Babassu oil declined in volume of use during 1947, dropping to 14,582,000 pounds from the previous year's total of 35,834,000 pounds. Castor oil use increased

sharply, while palm kernel oil, which in 1946 was reported at 18,939,000 pounds, fell to 47,000 pounds. In 1947, palm oil consumption, according to the Bureau of the Census figures, dropped over six million pounds to a little more than a million pounds, as against well over seven million pounds in the previous

(Turn to Page 204)

FACTORY CONSUMPTION OF ANIMAL AND VEGETABLE FATS AND OILS IN THE MANUFACTURE OF SOAP

Source: U. S. Department of Commerce Bureau of the Census
(Quantities in thousands of pounds)

Kind	1942	1943	1944	1945	1946 (Prelim- inary)	1947 (Prelim- inary)
Cotton oil	2,863	991	586	1,695	522	920
Peanut oil	485	256	564	846	7,347	376
Coconut oil	140,487	142,346	131,558	59,352	184,906	511,331
Corn oil	4,102	833	887	721	299	446
Soybean oil	31,510	15,428	3,258	4,219	3,545	5,375
Olive edible	27	11	83	18	1	4
Olive ined.	365	499	337	302	193	324
Olive foots	4,832	4,987	2,619	1,684	608	439
Palm oil	55,865	32,621	19,675	24,452	7,417	1,091
Palm kernel	1,028	1,840	1,938	29,967	18,939	47
Rapeseed oil ...	....	1	....	....	16	0
Linseed oil	4,019	1,697	2,253	915	576	279
Perilla oil ....	....	....	....	....	3	0
Castor oil	7,949	1,091	17,360	1,857	757	9,235
Sesame oil	189	65	....	....	1	7
Babassu oil	19,105	25,814	13,006	32,477	35,834	14,582
Other veg.	2,487	675	3,164	2,338	448	664
Lard	96	74,039	176,266	82,070	744	5,973
Stearin	483	275	211	....	0	0
Oleo oil	205	2,160	3,243	3,685	3,082	40
Tallow, ed.	634	4,652	43,761	32,067	6,895	7,087
Tallow ined.	1,188,923	884,862	1,005,777	952,335	871,968	1,109,005
Grease	338,974	463,811	523,972	412,105	337,871	416,838
Neat's foot	19	68	9	....	41	23
Marine oils	21,989	284	9	2	4	10
Fish oils	50,412	44,688	50,891	114,344	39,710	42,540
Total	1,871,039	1,703,994	2,001,611	1,757,451	1,521,727	2,126,636

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LILANAL—Has a leafy rose note and is an excellent Lily of the Valley base. It is soft and fine.

ROSANOL—A rose leaf note, reminding of Bromstyrol, but very much finer.

LILANTHAL—Is of value in all types of lilac perfume.

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FLORAFAL—Of a floral leafy character.

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UNIFORMITY means economy in time and expense . . . with uniform, trouble free results.

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Soap Sales Statistics

DELIVERY of soaps other than liquid and total worth of all types of soap made and sold in the United States during 1947 increased sharply over the previous year, according to figures compiled by the Association of American Soap & Glycerine Producers, New York. Last year, 2,814,947,000 pounds of soap other than liquid, worth \$640,586,000, were shipped and sold by 70 manufacturers who reported sales and delivery figures to the Soap Association. In 1946, 2,328,377,000 pounds of non-liquid soaps, having a sales value of \$383,757,000, were reported shipped by the same number of manufacturers.

Liquid soap deliveries reported by 40 manufacturers registered a decline in volume of over 600,000 gallons in 1947, as compared with the previous year. Liquid soap volume last year was reported as 3,109,000 gallons, having a value of \$3,944,000, while a year earlier, 4,011,000 gallons of liquid soap worth \$4,599,571 were shipped. In 1945, deliveries of liquid soap reached their highest point, totaling 4,272,000 gallons, having a sales value of \$4,724,000.

The aggregate sales worth of deliveries of all types of soap reported for 1947 by manufacturers participating in the census was \$644,530,000, which represents an increase of 90 per cent over 1946.

Dollar volume from sales of

SOAP SALES 1938-1947 (in thousands of dollars)					
1938	1939	1940	1941	1942	
1st Quarter	66,771	68,020	68,829	78,929	106,860
2nd Quarter	64,012	46,346	65,101	90,194	75,879
3rd Quarter	67,655	77,461	66,189	85,906	94,121
4th Quarter	57,142	58,853	58,385	70,057	85,248
Total	255,580	268,680	258,504	325,086	362,108
	1943	1944	1945	1946	1947
1st Quarter	90,945	104,523	110,214	91,807	160,606
2nd Quarter	84,546	108,680	102,533	89,298	145,664
3rd Quarter	94,600	112,312	93,045	76,550	141,507
4th Quarter	101,996	115,596	97,451	124,386	188,641
Total	372,087	441,111	403,243	382,041	636,418
SALES IN POUNDS (thousands)					
1943	1944	1945	1946	1947	
1st Quarter	710,047	783,699	805,101	616,357	677,788
2nd Quarter	650,394	822,035	751,636	601,661	643,575
3rd Quarter	694,784	812,677	654,707	494,391	679,360
4th Quarter	752,402	854,526	649,654	602,966	791,307
Total	2,807,627	3,272,937	2,861,098	2,315,375	2,792,030

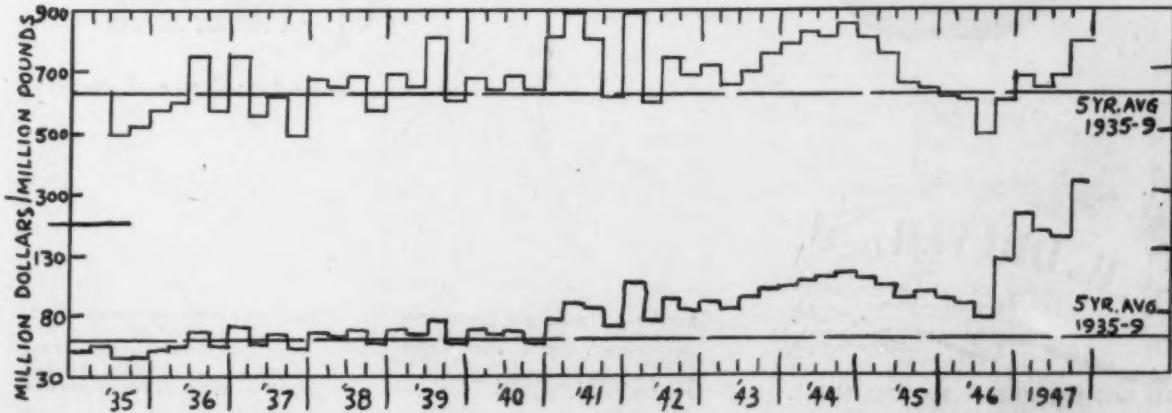
Above figures include only comparable totals of reporting members of Assn.
American Soap & Glycerine Producers

soap made and shipped during 1947 both for the entire year and for each quarter was larger than for the corresponding periods since figures have been kept starting in 1935. Dollar volume in the fourth quarter of 1947, the largest quarter on record, from the standpoint of value of soap shipped, was almost as large as the sales reported for the entire year of 1935. Reported deliveries of other than liquid soap during the final three months of 1947 were second largest of any fourth quarter since 1939. Annual overall volume

of non-liquid soaps shipped last year was the fifth in size for the years 1935-'47.

Fourth quarter, 1947, deliveries of other than liquid soap—the largest of any quarter during the year — amounted to 797,078,000 pounds and had a sales value of \$189,752,000. Second largest quarter of last year, from the standpoint of dollar volume, was the first quarter, which oddly enough had a smaller volume of soap delivered than the third quarter, which occu-

(Turn to Page 204)



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MORE THAN 10,000 TESTED AND APPROVED ODORS AND
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liquid or powder essences
in oil or alcohol types for

TOILET WATERS
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Fat Salvage Facts

IN THE 67 months, August 1942 through February 1948, American homemakers and the armed forces have recovered a total of 864,318,000 pounds of used cooking fat. American women who have salvaged waste fats have done a man-sized job, because kitchen fats salvaged over the 67 month period are equal to nearly 10 per cent of total U. S. production of inedible tallow and grease over the same period.

Household kitchen fat salvage has produced 678,470,000 pounds or 78 per cent of the total used fat saved. The armed services salvaged the balance. Current military collections are far below wartime, while household fat salvage collections still continue to average better than 10 million pounds a month.

Today, world-wide shortages of fats and oils are still acute and point up the need for fat salvage in the U. S. Charles E. Lund, Chief of the Foodstuffs Division, U. S. Department of Commerce, summarizes the fats and oils situation for 1947 with these statistics: "Production of fats and oils from domestic materials reached 9.9 billion pounds in 1947 . . . supplies were

increased by net imports of 475 million pounds . . . net receipts were 300 million pounds greater than in 1946, but were still more than one billion pounds below the pre-war average. Domestic disappearance of 10.4 billion pounds was one billion higher than 1946 and the largest since 1941. However, the attainment of this consumption did not permit any significant increase in stocks from previous low levels. Holdings at the close of 1947 totaled 1.3 billion pounds. . . ."

International trade in fats and oils, however, presents an even darker picture according to the Department of Agriculture's Office of Foreign Agricultural Relations. "World production and movement of supplies since the end of the war have not recovered sufficiently to take care of postwar needs. In 1947, about 3.5 million tons (seven billion pounds) of fats and oils went into world markets. This is three million tons below the prewar average of 6.5 million tons." It would take, for example, more than 70 per cent of U. S. production of all kinds of fats and oils last year to equal this seven billion pound deficit in world trade.

The importance of fat sal-

vage can easily be judged when collections are represented in terms of soap. Assuming that 6/10 of a pound of fat makes one pound of soap, the 847 million pounds of salvaged fat (as of the first of this year) would equal 1,412,000,000 pounds of soap. This represents 941,000,000 24-ounce packages of soap. If 24 packages were packed to a case, they would represent 39,000,000 cases of soap. Assuming the average per capita consumption of soap (not including scouring cleanser or washing powders) is 20 pounds a year, salvaged fats would supply 71,000,000 people with soap for a full year, or stated differently, salvaged fat would supply the entire U. S. population with household soap requirements for a half year.

Although this theoretical application of fats salvaged a teaspoonful at a time is impressive, salvaged fat has a far greater implication. Soapmakers know that many kinds of fats and oils are interchangeable and can be used either industrially or as food fats. Used kitchen grease, processed and refined for industrial uses, makes available greater supplies of food fats for shipment all over the world. The fact that this

(Turn to Page 231)

Civilian Fat Salvage Collections

	1942 lbs.	1943 lbs.	1944 lbs.	1945 lbs.	1946 lbs.	1947 lbs.	1948 lbs.
January		6,017,557	14,870,000	15,050,000	12,532,000	10,630,000	8,603,000
February		6,977,664	15,253,000	14,073,000	12,241,000	11,966,000	9,161,000
March		7,335,997	17,666,000	17,332,000	16,077,000	11,940,000	
April		7,327,133	18,272,000	15,307,000	13,965,000	13,313,000	
May		7,982,500	16,958,000	13,533,000	13,441,000	12,425,000	
June		8,646,605	14,663,000	11,498,000	11,244,000	11,216,000	
July		7,819,082	14,803,000	10,049,000	9,225,000	8,411,000	
August	3,016,338	7,341,875	11,379,000	9,380,000	8,776,000	6,925,000	
September ...	3,812,728	7,288,544	11,490,000	8,011,000	6,428,000	5,963,000	
October	4,821,160	7,379,483	12,069,000	10,735,000	4,545,000	6,845,000	
November ...	4,718,155	6,815,750	11,457,000	9,347,000	5,223,000	6,941,000	
December ...	5,098,846	8,924,350	11,734,000	8,577,000	7,445,000	8,159,000	

Inedible Tallow and Grease* Apparent Production, by Months or Quarters, 1924 to Date

(Million Pounds)

<u>Year</u>	<u>Jan.-Mar.</u>	<u>April-June</u>	<u>July-Sept.</u>	<u>Oct.-Dec.</u>	<u>Total</u>								
1924	220	207	218	203	848								
1925	215	208	191	192	806								
1926	206	215	217	215	853								
1927	225	228	209	194	856								
1928	211	205	169	211	796								
1929	215	213	199	217	844								
1930	219	221	211	216	867								
1931	215	238	215	218	886								
1932	218	232	192	205	847								
1933	210	236	236	251	933								
1934	262	262	252	245	1021								
1935	162	160	148	177	647								
1936	173	198	197	248	816								
1937	230	223	192	209	854								
1938	232	235	215	249	931								
1939	256	286	265	316	1123								
1940	383	350	292	350	1375								
1941	350	408	385	407	1550								
1942	437	459											
	<u>Jan.</u>	<u>Feb.</u>	<u>March</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1942	152	147	129	138	150	127	1737
1943	126	135	140	125	131	131	138	141	142	131	148	150	1638
1944	165	190	194	162	182	163	152	153	133	155	154	135	1938
1945	161	155	169	146	139	139	133	138	133	152	150	134	1749
1946	164	172	163	159	142	106	150	128	90	79	145	153	1651
1947	176	166	158	168	194	175	145	159	151	177	174	(185)	(2028)
1948

Inedible Tallow and Grease* Supply and Disposition, 1920 to Date

(Million pounds)

<u>Calendar Year</u>	<u>Total Apparent Production</u>	<u>Stocks Jan. 1</u>	<u>Imports of Tallow</u>	<u>Total Supply</u>	<u>Exports</u>	<u>Factory Consumption</u>	<u>Use in Soap</u>
1935-39 Avg.	874	315	64	1254	10	949	787
1924	848	125	2	975	116	758	721
1925	806	101	2	909	104	714	633
1926	853	91	14	958	86	741	673
1927	856	131	13	1000	93	781	727
1928	796	126	14	936	68	765	702
1929	844	103	17	964	66	736	681
1930	867	162	1	1030	74	741	687
1931	886	215	1	1102	80	773	653
1932	847	249	...	1096	60	786	693
1933	933	250	...	1183	73	767	634
1934	1021	343	43	1407	58	952	806
1935	647	397	246	1290	20	914	761
1936	816	356	69	1241	16	923	759
1937	854	302	4	1160	5	886	708
1938	931	269	1	1201	3	942	798
1939	1123	256	1	1380	5	1079	906
1940	1375	296	1	1672	7	1234	1043
1941	1550	431	30	2011	7	1649	1367
1942	1739	355	64	2158	5	1852	1528
1943	1638	301	32	1971	2	1749	1360
1944	1938	220	56	2214	25	1919	1530
1945	1749	270	31	2050	10	1840	1364
1946	1651	200	3	1854	9	1672	1210
1947	2028	173	...	2201	71	1885	1532
1948	...	245	...	...	...	...	...
1949	...	...	...	...	...	...	...
1950	...	...	...	...	...	...	...

SOURCE: Factory Consumption, stocks, imports and exports from the Bureau of the Census, apparent production computed.

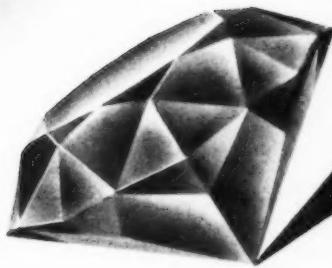
* Excludes wool grease

Compiled by Industrial Commodity Corporation





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The true value of a fine garnet is quickly recognized
in the brilliance of its rich winey color and the
purity of its cutting. In fine toilet soaps,
it is perfume that bespeaks true value. At the
counter, a buyer cannot compare ingredients,
mildness or lathering quality... often,
her decision is based on odor alone. A perfume
that says "true value" means a soap that sells.

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AROMATIC CHEMICALS

In this list of aromatic chemicals, those indicated in bold faced type are featured items of our factory which we consider to be particularly interesting to the soap maker. Many of these items are newly discovered aromatics with hitherto unknown odor

Acetophenone	Cinnamic Alcohol
Alcohol C-8	Cinnamic Aldehyde
" C-9	Citral
" C-10	Citronellol Coeur
" C-11	Citronellyl Acetate
" C-12	Citronellyl Propionate
Aldehyde C-8	Civetone
" C-9	Coumarine
" C-10	Dimethyl Benzyl Carbinol —Flowery, valuable in floral bouquets, especially lilac.
" C-11 (Undecylenic)	Dimethyl Benzyl Carbonyl Acetate —Rich, Rose-otto note, very floral, powerful and sweet in soap.
" C-12	Diphenyl Oxide
" C-14	Ethyl Phenyl Acetate
" C-16 (Methyl Phenyl Ethyl Glycidate)	Eugenol U.S.P.
" C-18	Eugenol 95%
Allyl Caproate	Fructone—Remarkably powerful fruit character for soap.
Ambrain—the concentrated heart of Labdanum, without waxes or gum.	Fruit Ketone—Fruity, refreshing, pineapple note. Galbanum Soluble Resin
Amyl Cinnamic Aldehyde (Flomine Coeur)	Geralex —A new synthetic development embodying the characters of Linalyl Acetate and Geranyl Acetate.
Anisic Acetate	Geralex B —Same as above—more economical.
Anisic Alcohol	Geralin —A new synthetic development embodying the characters of Linalool and Geraniol.
Aubepine (Anisic Aldehyde)	Geralin B —Same as above—technical grade.
Benzoin Resin Absolute	Geraniol Absolute
Benzophenone	Geraniol C.D.
Benzyl Acetate	Geraniol Coeur
Benzyl Salicylate	Geranoxide—Rosy, good in soap.
Bromstyrol	
Bois de Rose Terpeneless	
Cedarwood Oil White	
Cedrenol—Sweet, woody, rich—very lasting and stable in soap.	
Cedrenyl Acetate—Lively, woody, balsamic, sweet and lasting.	

VAN AMERINGEN

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FOR THE SOAP MAKER . . .

characters. From these, endless and unusual soap perfumes can be created. If these materials are not already known to you, ask for a sample as we know you will find them interesting and worthy of your consideration.

Geranyl Acetate Coeur	Methyl Cinnamate
Geranyl Acetate C.D.—less expensive grade.	Methyl Hexyl Ketone
Geranyl Butyrate	Methyl Nonyl Acetaldehyde
Geranyl Propionate	Methyl Phenyl Acetate
Girella—Inexpensive fresh spicy character suitable for use directly in soap products.	Myrrh Coeur (Resin Absolute)
Heliotropine	Nerolin
Hydratropic Acetate	Oak Moss Absolute
Hydratropic Alcohol—Very flowery and lasting in soap.	Olibanum Coeur (Resin Absolute)
Hydroxycitronellal	Opopanax Resin Absolute
Ionone Extra C-1	Para Cresyl Acetate
Ionone Extra Pure	Para Cresyl Phenyl Acetate
Ionone Alpha White	Petitgrain Absolute
Ionone Alpha Methyl	Phenyl Acetaldehyde Dimethyl Acetal
Ionone Beta	Phenyl Ethyl Acetate
Ionone Methyl C-60	Phenyl Ethyl Alcohol
Ionone Methyl Gamma Pure—the richest of the Methyl Ionones.	Phenyl Ethyl Benzoate
Iso Butyl Phenyl Acetate	Phenyl Ethyl Cinnamate
Iso Eugenol	Phenyl Ethyl Propionate
Iso Jasnone—Very powerful Jasmin body—very lasting in soap.	Phenyl Propyl Alcohol
Iso Jasnone B—Technical grade	Phenyl Propyl Propionate
Jessemal—Rich Jasmine note; excellent in soap	Rhodinol Coeur
Labdanum Resin Absolute	Rhodinol Acetate
Linalool B	Styrax Coeur (Resin Absolute)
Linalool B Extra	Styrallyl Acetate
Linalool Coeur	Styrallyl Alcohol
Linalyl Acetate 90-92%	Talia—A new chemical possessing a green, leafy, powerful, violet-like character.
Methyl Benzoate	Terpineol
	Terpinyl Acetate
	Terpinyl Propionate

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How To REGISTER

Under the new Federal Insecticide Act

By Sanford J. Hill*

E. I. du Pont de Nemours & Co.

Simplified procedure for preparing cover sheets and data sheets for Federal and State registration... adapting existing single product forms for use as cover sheets.

THE passage of the Federal Insecticide, Fungicide and Rodenticide Act and the similar Model State Bill in seven states (North Carolina, Colorado, Montana, North Dakota, South Dakota, Vermont and Kansas) has made it necessary for many manufacturers and distributors of economic poisons to register their products more widely.

To lighten the work involved in registration, representatives of the NAIDM and AIFA have been working with state regulatory officials since the first of the year for the adoption of uniform registration procedures with the object of eliminating a tremendous amount of repetitive typing and signing, and making possible rapid completion of registration, accurately, and with a minimum of labor.

Under the suggested simplified registration procedure, application for the registration of all products is made on a cover sheet. Attached to this will be product data sheets for each product to be registered and, when required, labels for each product. This system is adaptable to every state's requirements and the form of the cover sheet is sufficiently flexible to provide for slight variations among the various state laws.

It is important to prepare registration material carefully. It is of the utmost importance that the per-

son or persons in charge of the registration work for any company should (1) carefully read the various laws, or at least the sections of the laws pertaining to registration, (2) carefully study any regulations which have been promulgated, and finally, (3) observe the instructions which are on or sent with the registration blanks. Reports from both federal and state officials indicate that these things have not always been done and that many unsatisfactory applications for registration have resulted. It is grossly unfair to expect satisfactory results if the completion of registration material is assigned to a person unfamiliar with all the details.

The cover sheet should be completed first in preparing applications for registration. Most prospective applicants have received application blanks from the Federal Insecticide Division and from Kansas, Vermont and South Dakota. They are typical examples of the new procedure.

THE federal blank is a master piece of simplicity. On this form the number of products to be registered should be stated in the designated space. In listing the brand names they may be numbered consecutively, if desired, but it is probably undesirable to number the products because the sequence will lose significance when additional blanks are used for subsequent registrations and if certain products are not accepted for registration. The space provided for listing will accommo-

date about forty names and, if this is insufficient the listing may continue on an attached sheet. Attention is drawn to the last feature on the blank which provides for a mailing address if different from that shown with the firm name. It should be noted that only one copy of this form is to be submitted each time application is made for registration. A carbon copy should be retained for file.

Kansas was one of the first states to adopt the new procedure. Since annual registration and fees are required in Kansas, their form differs slightly from the federal application. This form may be used for all types of registration—original, supplemental and re-registration. The latter two types of registration should be indicated by heading the list with the appropriate designation. Re-registration may be effected merely by listing the products concerned provided no changes in product or labeling have occurred during the year. However, it is suggested on the blank that complete data be submitted each year so that the state files are kept up-to-date. The Kansas form is to be executed in duplicate and the duplicate form will be returned to the applicant as evidence of registration. Although products may be numbered in the application, the desirability of this practice is questionable, as mentioned under the discussion of the federal blank.

The Vermont cover sheet is perhaps the simplest of all as it requires no listing of products. How-

* Based on a talk before the Nat'l. Association Insecticide & Disinfectant Mfrs., Baltimore, Md., Dec. 1, 1947.

ever, it should be noticed that the attachment of *numbered* product data sheets is requested in order to tie in with the cover sheet. These data sheets will be discussed later. The Vermont form provides no space for a mailing address but there would probably be no objection to typing this in the space above the line "fee enclosed." Only one copy of the Vermont application is required.

The South Dakota application illustrates another variation possible in the design of the cover sheet. This form provides for the listing of the name and address given on the label of the product if other than that shown on the application. Presumably this information is necessary here since no data sheets are required in South Dakota. Although it is realized that the heading "Name of Poisons" refers to economic poisons the word "poisons" is perhaps an unfortunate word inasmuch as many of the products in this field are not properly classed as poisons. It is assumed that it will be satisfactory to show the desired mailing address in the block in the upper left-hand corner. Of great interest to all registrants is the possible elimination of the sample requirement in South Dakota. This was discussed with the South Dakota officials during the past summer and it is expected that official announcement will be made that this requirement will be waived except in special cases where individual samples may be requested.

Permission was secured from the Maryland Inspection and Regulatory Service to indicate the way in which a single product form might be altered to use as a cover sheet under the new procedure. The Maryland form (Fig. 1) is typical of forms used in many states for individual product registrations and serves to illustrate how such forms may be modified (when such modification is permitted) to adapt them to the new procedure. It is our understanding that such modification will be acceptable in the states of New Jersey, Minnesota and North Dakota until such time as new forms are issued. It is possible that certain

other states will accept such modification in the near future.

Product data sheets, wholly prepared by the registrant, are something new in registration. Analyses and other information formerly entered on the old application blanks will now be given on an 8½ x 11 product data sheet. No standard form has been set up and the illustrative data sheets reproduced here are suggested forms which have met with acceptance by the officials. The information required varies among the states and the product data sheet should contain sufficient information to be acceptable in every state. So far no state has objected to receiving more data than it requires. It is suggested that data sheets be prepared with great care, then mimeographed, or otherwise duplicated, for convenience. If only a few are needed, good carbon copies will suf-

fice. Occasionally one state may require special information which the registrant will prefer to add to the data sheet for that state only.

Figures 2 to 5 are reproduced to illustrate certain points which are commonly met. The nature of the product is identified at the top for ready reference. Next, the name of the product is shown. It is suggested that care be given to trade-mark protection in stating the name of the product. The desired mailing address is included on the data sheets for the convenience of the officials. The guaranteed analysis will give the same information as shown on the label if quantitative disclosure of ingredients is made thereon. If qualitative disclosure is made on the label, the quantitative disclosure must be given on the data sheet. (The Federal Regulations provide for the confidential handling of such data).

ORIGINAL

STATE OF MARYLAND REGISTRATION NO. _____

REGISTRATION FORM FOR INSECTICIDES AND FUNGICIDES

INSPECTION AND REGULATORY SERVICE *to* 194
College Park, Maryland

Application is hereby made for the registration of a brand of Insecticide/Fungicide for a period beginning with the actual date of registration and continuing until December 31, 1944, said Insecticide/Fungicide to be sold under & labeled showing brand name, guarantee, list of ingredients, or other declarations as follows:

shown on the attached sheets

Brand Name _____

GUARANTEED ANALYSIS

described
on the attached label sheet

I hereby certify that the information appearing above is true and correct in every respect; that, each and every package of the above named material will be labeled *as shown* (and in addition that net weight and manufacturer's name and address will be shown); that the above declarations are the guarantees of the applicant as to the chemical composition of the material above named; and that this application is made for and on behalf of:

attached

Name of Manufacturer or person responsible for placing commodity on market _____

Street _____ City _____ State _____

By _____ *Applicant* _____

Mailing Address in Full _____

NOTE.—Registration fee \$1.00 per brand (no registration to pay more than seventy-five dollars in any one calendar year, regardless of the number of brands registered). Make remittance payable to Maryland Inspection and Regulatory Service.
(Applicant not to fill in below this line.)

CERTIFICATE OF REGISTRATION

This certifies that the above named applicant is hereby licensed to sell the above brand of Insecticide/Fungicide in the STATE OF MARYLAND for a period beginning with the actual date of registration and ending December 31, 1944, when sold, offered, or exposed for sale under the brand name and guarantees as they appear above.

on the attached sheets

Paid _____ Date _____ *Date Received* _____ *Comptroller* _____

RETURN BOTH COPIES TO THIS OFFICE

Figure 1.

PRODUCT DATA SHEET

FOR THE REGISTRATION OF THE INSECTICIDE

"BOZAN" Fly Spray

Manufactured by: Anybody's Specialty Co.
Anywhere, Illinois

Mailing Address: Anybody's Specialty Co.
Attention: John Q. Somebody
100 Main Street
Anywhere, Illinois

GUARANTEED ANALYSIS

Active Ingredients	100%
Dichlorodiphenyltrichloroethane (DDT setting point 69°C. min.)	8.0%
Pyrethrins	0.1%
Petroleum Hydrocarbons	94.9%

Supplemental Information

Manufactured by: Underground Refining Co.
at: Open Spaces, Texas

Package sizes generally distributed: 1 pt., 1 qt., 1 gal.

Figure 2.

PRODUCT DATA SHEET

FOR THE REGISTRATION OF THE INSECTICIDE AND FUNGICIDE

"BOZAN" Home Garden Dust

Manufactured by: Anybody's Specialty Co.
Anywhere, Illinois

Mailing Address: Anybody's Specialty Co.
Attention: John Q. Somebody
100 Main Street
Anywhere, Illinois

GUARANTEED ANALYSIS

Active Ingredients	94.9%
Chlorom Isomers of Dodecylbenzene Phosphoglycine	0.6%
Other Isomers of Dodecylbenzene Phosphoglycine	4.4%
Zinc Dodecylbenzene Phosphoglycine	3.8%
(Total Zinc as metallic 1.62%)	
Copper Chloride ($CuCl_2 \cdot 2H_2O$)	1.1%
(Total Copper as metallic 0.47%)	
Sulfur (average particle size 4 microns)	74.1%

Insert Ingredients

Manufactured at: Chemical Falls, Michigan

Package sizes generally distributed: 8 oz., 1 & 4 lb.

Figure 3.

PRODUCT DATA SHEET

FOR THE REGISTRATION OF THE WEED KILLER

"BOZAN" Lawn Dweezer

Manufactured by: Anybody's Specialty Co.
Anywhere, Illinois

Mailing Address: Anybody's Specialty Co.
Attention: John Q. Somebody
100 Main Street
Anywhere, Illinois

GUARANTEED ANALYSIS

Active Ingredient - Isopropyl 2,4-Dichlorophenoxyacetic acid equivalent 11.6%	13.0%
Insert Ingredients	86.9%

Weight per Gallon 8.3 pounds

Supplemental Information

Manufactured at: Chemical Falls, Michigan

Package sizes generally distributed 1 pt., 1 gal.

Figure 4.

PRODUCT DATA SHEET

FOR THE REGISTRATION OF THE RODENTICIDE

"BOZAN" Defaster (Brown Rat)

Manufactured by: Anybody's Specialty Co.
Anywhere, Illinois

Mailing Address: Anybody's Specialty Co.
Attention: John Q. Somebody
100 Main Street
Anywhere, Illinois

GUARANTEED ANALYSIS

Active Ingredient - Alphanaphthalthiourea	10%
Insert Ingredients	90%

Supplemental Information

Manufactured at: Chemical Falls, Michigan

Package sizes generally distributed: 4 & 8 oz., 1 & 5 lb.

Label includes (in red) "POISON" - skull & crossbones - antidote.

Figure 5.

Figure 2 gives the analysis of a typical fly spray. Note that "petroleum hydrocarbons" is considered an active ingredient.

The analysis in Figure 3 illustrates several points: (1) the method of listing an isomeric active ingredient when one of the isomers is particularly effective and desirable,

and other isomers are grouped because of their lesser activity; (2) the requirement (in some states) for showing the equivalent percentage of metal present in certain metallic compounds where these are active ingredients; (3) the display of the formula $CuCl_2 \cdot 2H_2O$ leaves no doubt as to the composition claimed; (4) the re-

quirement (in some states) for stating the particle size of sulfur in products recommended for dust application.

Figure 4 is a data sheet for a typical 2,4-D herbicide. The statement under the active ingredient gives its equivalent in terms of 2,4-D
(Turn to Page 205)

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G. H. WOOD
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Sanitation for the Nation

Practical Aspects of

QUATERNARIES

By Jack C. Varley*

James Varley & Sons, Inc.

IT WAS about two years ago that general interest in quaternaries as sanitizers was first widely evidenced. Little was known of the mechanics by which these quaternaries destroyed bacteria, but they appeared to have very powerful bactericidal properties as well as great inhibitory value. There still exists quite a bit of confusion as to the ultimate or maximum killing potency of these compounds, but we do know that within certain limits under practical conditions they can be used as germicides, antiseptics and sanitizers with excellent results.

Quaternary ammonium compounds ordinarily are colorless, or at any rate completely colorless when in usable dilutions. They are almost entirely without odor and in the solution generally employed in practice have only a very slight taste.

Although most quaternaries on the market form profuse suds, they do not, of themselves, have very great detergent value. In fact by ordinary standards, their detergent properties are very poor. Glasses, dishes, knives and forks, etc. that are heavily contaminated with fat, grease, or other organic matter cannot be cleaned with the ordinary quaternary solution. It is necessary that the articles first be washed, preferably in a solution containing organic alkaline detergents, then rinsed in clear water to remove the detergent and then given a final rinse in the quaternary solution to destroy any germ life that may remain on the article.

Solutions of quaternaries have shown no evidence of causing skin irritations, indicating that the hands

can be in and out of the solution daily without any fear of injury to the user.

Because quaternaries, as a general rule, lower the surface tension of solutions, a greater opportunity is given to contact all surfaces, thereby insuring better disinfecting action.

There are a great number of quaternaries being offered the trade but too little is known concerning the true germicidal properties of most of them. A few of the compounds, however, have been under investigation for a number of years and the manufacturers are able to substantiate their claims from a chemical, bacteriological, toxicological, biological and practical usage viewpoint.

The compounder or distributor of quaternary ammonium compounds would do well to investigate material quality and his source of supply thoroughly before marketing a package for resale. The manufacturer's phenol coefficient claims alone are not sufficient grounds to market the product as a general disinfectant, sanitizer, deodorant, cleanser, and antiseptic. It is interesting to note that a cresylic disinfectant containing 50 per cent cresylic acid made by manufacturer "A" and another cresylic disinfectant containing 50 per cent cresylic acid made by manufacturer "B" will both have almost identical germ killing properties provided the formulations are along the same lines. This doesn't hold true of quaternaries, however. A 10 per cent solution of manufacturer "X"'s product may show 50 per cent or 100 per cent higher germicidal activity than a 10 per cent solution of the product made by manufacturer "Y." Because of this wide variation in laboratory germ killing values it is necessary to control the dilution factor for these compounds when they are to be used under practical condi-

tions. For instance, some of these quaternaries will destroy bacteria *in the laboratory* even when diluted as high as 1 to 100,000 with water. Under practical conditions of use in the actual sanitizing of eating utensils, however, this product might not destroy bacteria in a dilution greater than 1 to 8,000. A tentative procedure now being advanced by most manufacturers of quaternaries is to recommend that one part quaternary be added to 6,000 parts of water. (If employing a 10 per cent solution, this would mean 1 ounce of 10 per cent solution to 600 ounces of water, or 1 ounce to approximately 5 gallons of water). This solution, under practical conditions of use, has so far proven effective in almost completely destroying bacteria life in the final rinse solution.

Detergent Value

QUATERNARIES are sometimes referred to as "wetting agents," "detergents" or "cationic detergents." It is true that most quaternaries lower the surface tension to a considerable degree and usually form volumes of rich suds. This is no indication, however, of detergent action. The fact that a product is a good detergent does not mean it is a good wetting agent and vice versa. An excellent wetting agent may possess very poor detergent qualities. Therefore, it is not in order to describe all quaternaries as detergents or to ascribe to them any great degree of cleansing power, especially in the concentrations generally recommended for sanitizing purposes.

The amount of suds that a quaternary compound produces in water is not an indication of its germicidal value any more than it would be an indication of its detergent property. Some quaternaries with relative-

* Based on an article in *Soap & Sanitary Chemicals*, December, 1947.

ly low sudsing value show excellent germ-killing properties, whereas others that form copious suds do not exert great bactericidal effect.

Many times the question has arisen as to whether or not the combination of an alkaline detergent and a quaternary can be used in one tank so as to both clean and sanitize the eating utensils in one operation. The answer is "NO." In a very short time the organic matter, (oils, fats, and debris from the eating utensils) would nullify the sanitizing properties of the quaternary, rendering it useless. When using quaternaries a minimum of two tanks is required for sanitization of eating utensils. Three tanks are preferable, but if only two are provided, the first tank should contain the cleaning solution and the second tank the quaternary solution for the final rinse.

IT IS in the field of disinfection that quaternaries are running into difficulty. The user of industrial disinfectants expects the disinfectant to clean as well as destroy bacteria. Most commercial disinfectants are formulated with mixtures of soap and some ingredient toxic to germ life. The claim is often made for these compounds, pine oil disinfectant, cresol compound, coal tar disinfectant and some of the newer synthetics, that they will clean and disinfect in one operation. Quaternaries alone cannot perform in this manner because of their low detergent value, and as quaternaries are not compatible with soap, the two cannot be used together with satisfactory germicidal results. The only other alternative would be to make a mixture of trisodium phosphate, tetrasodium phosphate or some other organic detergent with the quaternary and use the combination for cleaning and disinfecting inanimate objects. This evidently would be a rather unsatisfactory formulation because the phosphates would be too harsh for general use on floors, painted surfaces, metal fixtures, etc.

In addition, users of commercial disinfectants expect the customary deodorant characteristics.

In the past two or three years the use of quaternary ammonium germicides has become very widespread. Originally these products were employed primarily for disinfecting or cleansing in the operative field during surgery and to some degree for washing and scrubbing surgeons' hands and arms in aseptic surgical practice. For the disinfection of surgical instruments, quaternaries have not proven satisfactory unless some sort of inhibitor is used to prevent rusting or pitting of the instruments. Because the quaternaries exert a decided wetting action and lower the surface tension tremendously, they quickly cause oxidation of metal.

Recently a great deal of interest has been centered around the use of quaternaries for general disinfection purposes. These products are being put to use in a wide variety of industries including food establishments, dairies, pasteurizing plants, hospitals, homes and in swimming pools and for disinfection in laundries—along with dozens of other recommended uses. (See list at end of this article.)

Quaternaries are not by any means the answer to the search for the so-called "perfect disinfectant," although they do have a very definite place in the sanitation field. Their scope of use will no doubt widen in years to come, but at the present time the use of quaternaries seems to be more or less limited to sanitation problems and to a lesser extent disinfection and antiseptic measures.

It might be well to offer at this point a brief explanation as to the difference between "sanitation" and "disinfection." The word "sanitized" is generally understood to indicate a degree of cleanliness that will insure safety to human beings. Drinking water, for instance, is considered safe for human consumption if the bacteria count is kept down below 100 per cc. "Sanitizing" of eating utensils indicates that the articles are free of bacteria to the point where there is no health hazard connected with the use of these utensils.

On the other hand, "disinfec-

tion" implies the destruction of *all* germ life. It is around this point of complete kill, or on the other hand *almost* complete kill, that a great deal of confusion and misunderstanding has arisen concerning the application of quaternaries to practical conditions of use. Some contend that it is not necessary to kill all of the bacteria when sanitizing eating utensils, but that if the number of organisms is reduced below a certain point, there is no hazard insofar as use of these articles by humans is concerned. The other school of thought insists that a product used for sanitizing must destroy all the bacteria—in other words, must act like a disinfectant. If, for the sake of argument, we agree that a sanitizer does not have to destroy *all* of the bacteria, at just what point can a line be drawn? Results of recent tests show that quaternaries destroy about 99.9999 per cent of the bacteria when used in proper strength solutions. To the average person this would appear to be a high percentage of kill. It is—but under present regulations, a product cannot be called a disinfectant unless it destroys 100 per cent of the bacteria contacted. For this reason, quaternaries are today classed as "Sanitizers" in connection with the cleaning and rinsing of eating utensils.

Whether a sanitizer kills 95 per cent or 99.9999 per cent of the bacteria present is of little importance. It is important, however, that the number of bacteria be reduced to the point where their presence on eating utensils constitutes no health hazard. It is universally agreed that such a count must be less than 100 by standard test,—which is comparable to the bacterial count of safe drinking water.

Those selling quaternary ammonium compounds and recommending the use of their solutions for both sanitizing of eating utensils and for disinfection of inanimate objects, should be sure the label specifically outlines the proper strength solution for each recommended use.

It has been proven that as a general rule most quaternary am-

nium germicides are not compatible with soap or soap solutions. Therefore, an article that is to be sanitized or disinfected with a quaternary ammonium solution should first be thoroughly cleaned, preferably with an alkaline detergent. Here again we run into another peculiarity in that there are certain alkaline detergents that are incompatible with most quaternaries. For instance, sodium metasilicate will completely void the germicidal potency of certain quaternaries and some manufacturers caution against the use of sodium tetraphosphate and sodium hexametaphosphate with their germicides.

Again speaking generally, the following alkaline detergents apparently can be used for cleaning articles to be disinfected with quaternaries with but little if any reduction of germicidal efficiency: trisodium phosphate, borax, sodium bicarbonate, tetrasodium pyrophosphate and sodium sesquicarbonate.

Apparently trisodium phosphate is most compatible with the general run of quaternary ammonium compounds. This may be due to the fact that the presence of trisodium phosphate raises the pH of the solution considerably and quaternary ammonium compounds are nearly always more active in high pH solutions than in low. Care must be taken as to the amount of phosphate or alkali that is mixed with the quaternary as an excess may lower the germicidal potency of the solution to a very great degree.

It has been shown that small amounts of soap do not seriously affect the germicidal activity of most quaternary ammonium compounds but there is no way of the average user knowing whether he has "little soap" or a "lot of soap" in his solution. And there is no method of regulating the "carry over" of soap solution from the cleaning tank into the sanitizing rinse tank.

Presence of organic matter also seems to have a decided effect on the germicidal efficiency of quaternary compounds. The solution of quaternary ammonium compound used for sanitizing purposes contains such a minute quantity of actual ger-

micide (about 1 part per 6000 parts of water) that the presence of organic matter in almost any small quantity is sufficient to absorb or inactivate the very small amount of active germicide present — another reason why articles should be cleaned of all foreign matter and rinsed before immersing in the sanitizing solution.

Therefore, for all practical purposes it is recommended that one of the compatible alkaline detergents be used in washing articles that are to be given a final sanitizing rinse with a quaternary ammonium germicide.

Testing of Quaternaries

A great deal of research has been done on testing of quaternaries. The U. S. Department of Agriculture tests products offered for sale commercially by the following methods:

- (1) The product will be tested against both *Staphylococcus aureus* and *E. typhosus* by the "F.D.A. Phenol Coefficient Method" of test with a few minor variations.
- (2) The product will then be given a "use-dilution" test to determine whether under more practical conditions the product destroys bacteria as effectively as it does under standard laboratory procedures of examination.

Concentrates

THESE cationic germicides are supplied by manufacturers in both powder and liquid forms. The powder forms are usually 100 per cent active material and can be diluted with alcohol or water (or mixtures of both) to form less concentrated germicides. Some compounders prefer to mix the 100 per cent concentrated germicide with alkaline or nonionic detergent powders, forming a dry mix that is then sold to the consumer for making germicidal solutions. To date, however, the liquid forms seem to be most popular, probably because of the ease with which they can be used and the fact that there is no mixing or dissolving to contend with insofar as the ultimate user is concerned.

Possible Applications

1. To kill or diminish effects of bacteria.

2. Eliminate mold, slimes and algae— as in swimming pool, etc.
3. Sanitize dishes, china, glassware in hotels, eating places, bars, etc.
4. Sanitize and refresh coffee urns and towels, wash cloths, etc.
5. Refreshen articles by killing bacteria causing decay and putrefaction.
6. Washing clothes, towels, diapers, sheets.
7. Garbage can deodorant; stops decay and putrefaction.
8. Counter cleaning; sanitizer and deodorant in drug stores for syrup containers, etc.
9. Sanitize and refresh refrigerators.
10. Sanitize and refresh show cases for meat, food, and delicatessen stores.
11. Dairy sanitizer and cattle wash.
12. Vegetable displays.
13. Butcher shop sanitizer and fish market.
14. Fishing and pleasure boat sanitizer and deodorant.
15. Fishing boat preservation and for preserving specimens for mounting.
16. Cold sterilization of instruments for doctors, dentists, veterinarians.
17. Cleaning wounds and skin for operations.
18. Household freshener to kill animal odors and dirt.
19. Toilet and powder room sanitizer.
20. Refrigerator and meat box sanitizer.
21. Frosted food cabinet sanitizer.
22. Vegetable counter sanitizer.
23. Sprays for chicken houses—lower bacteria count.
24. Veterinary products—animal washes, dips, etc.
25. Athlete foot preventive.
26. Killing algae in swimming pools.
27. Mixed with DDT (an emulsifier is used here).
28. Cleaning beer dispensing equipment.
29. Spraying ice used for food preservation (consult health authority).*
30. Spraying ice used for fish preservation.*
31. Eliminating mold formation on meats.*
32. Washing vegetables before home quick-freezing.*
33. Washing citrus fruits to get rid of sprays used and stop mold.*
34. Treating leather goods to diminish mold.
35. Beverage plants—sanitizing and sterilizing.
36. Killing algae in air conditioning cooling systems and refreshening air (an inhibitor is added).
37. Sanitizing barber instruments.
38. Sanitizing dips for manicuring.
39. Laundry dips for sanitizing.
40. Sanitizing bathing suits.
41. Sanitizing milk containers, food boxes, thermos bottles.
42. Cleaning meat before home freezing.*
43. Washing fruits before canning.*
44. Washing shellfish before storage.*
45. Killing slimes on ropes, sailboats, motor boats.
46. Killing sick room odors; mustiness; washing sheets, etc.

* Applications like these may require approval of local health authorities.

Estimation of Pyrethrins

By Harvey A. Seil, Ph.D.*

Seil, Putt & Rusby, Inc.

BECAUSE of indicated variations in technique in different laboratories in use of the Seil Method for the Determination of Pyrethrins, Dr. Seil has agreed to republish his method exactly as it is conducted today by him. Cooperating in this republication has been the Chemical Analysis Committee, Insecticides, Dr. George W. Fiero, Stanco, Inc., chairman, Natl. Assn. of Insecticide & Disinfectant Mfrs.—The Editors.

Method I. Determination of Pyrethrins in Pyrethrum Flowers

(1) Place 12.5 g. of finely ground pyrethrum flowers (minimum 90% through 40 mesh) into an extraction thimble. Cover the sample with a cotton plug previously washed with petroleum ether.** Extract with petroleum ether in a Soxhlet extractor. After extraction is complete (usually 6-8 hours), evaporate the petroleum ether to a volume of approximately 40 ml., stopper the flask, and place it in a refrigerator at a temperature of 0 to 5 degrees C. for at least two hours (preferably overnight).

(2) Filter the cold extract through a small piece of cotton, previously wetted with cold petroleum ether, placed in the stem of a glass funnel and collect the filtrate in a 250 ml. erlenmeyer flask. Add 20 ml. of chilled petroleum ether to the extraction flask. With the aid of a rubber policeman, dislodge the resinous material in the flask, swirl the contents without allowing the wash liquid to warm up appreciably, and

* With the cooperation of the Chemical Analysis Committee, Insecticide Section, NAIDM.
** Place a piece of glass rod under the thimble to assist in rapid extraction.

filter through the cotton. Repeat the operation twice using 10 ml. portions of chilled petroleum ether.

(3) Add several glass beads and remove the solvent on a water bath, without attempting to heat the residue long enough to remove the last traces of solvent.

(4) Add 15 ml. of 0.5 N ethyl alcoholic NaOH to the residue and reflux for one hour. Transfer the solution to a one liter beaker, wash the flask with two 25 ml. portions of distilled water. Add 1 ml. of deodorized kerosene.

(5) Dilute the sample with distilled water to a total volume of approximately 200 ml. Add a few glass beads and boil until the volume is reduced to approximately 150 ml. Add 1 g. of filter-cel and transfer the mixture quantitatively to a 250 ml. volumetric flask. Add 10 ml. of 10% barium chloride solution, dilute with distilled water to volume, and mix thoroughly. Filter through a fluted filter paper.

Reagents

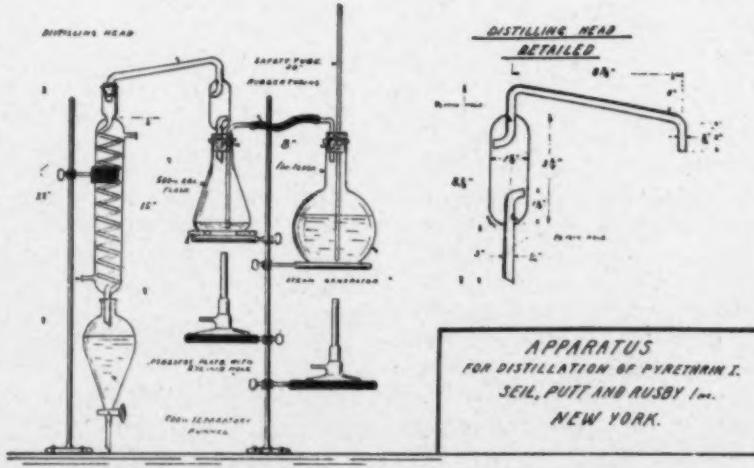
Petroleum Ether—light boiling (b.p. 20° to 40°C. at altitude where it is used.)
Phenolphthalein Test Solution
Sodium Hydroxide — 0.02 N solution, standardized daily
Alcoholic Sodium Hydroxide — 0.5 N
Ethyl Alcoholic Solution
Ether—U.S.P. Grade
Sulfuric Acid—1.0 N Solution

(6) Measure exactly 200 ml. of clear filtrate and transfer quantitatively to a 500 ml. erlenmeyer flask. Add one drop of phenolphthalein, neutralize with 1.0 N sulfuric acid and add 1 ml. of the sulfuric acid in excess. Distil with steam, using apparatus shown in Figure I, until the volume remaining in the flask is approximately 20 ml. The volume of distillate should be 250 to 350 ml.

(7) To the separatory funnel add 50 ml. of neutral petroleum ether then shake thoroughly for one minute.*** After the liquids have sepa-

*** If an emulsion forms, add a few crystals of sodium chloride and shake.

Figure 1:



rated, draw off the aqueous layer into a second 500 ml. separatory funnel to which a second 50 ml. of neutral petroleum ether has been added. Shake for one minute and after the liquids have separated discard the aqueous layer. Wash the petroleum ether in the first separatory funnel by shaking with 10 ml. of water using the same wash water for the petroleum ether in the second funnel.

Repeat with a second wash water of 10 ml. as before. Combine the petroleum ether extracts in the first separatory funnel. Neutralize 15 ml. of water containing 1 drop of phenolphthalein indicator solution with 0.02 N NaOH and add it to the combined petroleum ether solutions, then titrate with 0.02 N NaOH, shaking after each addition, until the aqueous layer is just pink. Each ml. of 0.02 N NaOH consumed is equal to 0.0066 g. of Pyrethrin I. The 200 ml. aliquot taken corresponds to 10 g. of sample. Therefore the number of

100
ml. consumed times 0.0066 x ——————
10 gives the percentage of Pyrethrin I.

(8) Cool the flask containing the residue from the steam distillation and filter the solution through a Gooch crucible. Wash the flask with three 10 ml. portions of water and use these successively to wash the Gooch crucible. Transfer quantitatively to a pear shaped 500 ml. (Squibb) separatory funnel. Add 5 ml. of concentrated hydrochloric acid and saturate with sodium chloride to excess. Extract the mixture by shaking thoroughly for one minute with 50 ml. of ethyl ether. Draw off the aqueous layer into a second separatory funnel and extract again with 50 ml. of ethyl ether. Continue this extraction and drawing off of aqueous layer using 25 ml. of ethyl ether for the third and fourth extractions. Wash the ether extracts by shaking successively with exactly 10 ml. of distilled water, and repeat with a second successive wash using exactly 10 ml. of distilled water.

(9) Combine the ether solutions, draw off any water that separates and filter through a plug of cotton, previously wetted with ether,

into a 250 ml. extraction or erlenmeyer flask. Wash the separatory funnel and cotton with 10 ml. of fresh ether.

Evaporate the ether on a water bath and dry the residue at 100° C. for 10 minutes. Blow gently into flask twice during the period to facilitate removal of vapors. Add 30 ml. of distilled water, boil to dissolve the residue and cool. Add a drop of phenolphthalein indicator and titrate with 0.02 N NaOH. Each ml. of 0.02 N NaOH consumed is equivalent to 0.00374 g. of pyrethrin II. The 200 ml. aliquot taken corresponds to 10 g. of sample. Therefore the number of ml. consumed

100
times 0.00374 x —————— gives the per-
10 centage of pyrethrin II.

Method II. Determination of Pyrethrins in Mineral Oil Sprays

(10) For flysprays not containing perfumes or other products which saponify to produce interfering organic acids, reflux 100 ml. of the spray with 15 ml. of 0.5 N ethyl alcoholic NaOH for two hours. Cool and transfer to a 500 ml. separatory funnel. Add 85 ml. of water, shake, and withdraw lower layer into a liter beaker. Shake the kerosene with four successive 25 ml. portions of water. Combine the washings and proceed as in paragraph (5) et seq. The 200 ml. aliquot taken corresponds to 80 ml. of sample. Therefore the number of ml. of 0.02 N NaOH consumed in

100
paragraph (7) times 0.0066 x ——————

80 gives the grams of pyrethrin I per 100 ml. of spray. Similarly the number of ml. of 0.02 N NaOH consumed in paragraph (9) times

100
0.00374 x —————— gives the grams of

80 pyrethrin II per 100 ml.

Method III. Determination of Pyrethrins in Extracts Containing Approximately 2% of Pyrethrins

(11) Pipette a 10 ml. sample of the extract, allowing the pipette

to drain five minutes. Reflux with 15 ml. of 0.5 N ethyl alcoholic NaOH for two hours. Cool, transfer to a liter beaker, and continue as in paragraph (5) et seq. The 200 ml. aliquot taken corresponds to 8 ml. of sample. Therefore the number of ml. of 0.02 N NaOH consumed in paragraph

100
(7) times 0.0066 x —————— gives the

8 grams of pyrethrin I per 100 ml. of extract. Similarly the number of ml. of 0.02 N NaOH consumed in paragraph

100
(9) times 0.00374 x —————— gives the

8 grams of pyrethrin II per 100 ml. of extract.

Method IV. Determination of Pyrethrins in Pyrethrum Concentrates

(12) Reflux a sample containing approximately 200 mg. of pyrethrins (1 g. of 20% concentrate) with 15 ml. of 0.5 N alcoholic NaOH for two hours. Cool, transfer to a liter beaker and proceed as in paragraph (5) et seq. The 200 ml. aliquot taken corresponds to 4/5 of the sample. Therefore the number of ml. of 0.02 N NaOH consumed in para-

sample x 4/5
graph (7) times 0.0066 x ——————

100 gives the percentage of Pyrethrin I. Similarly the number of ml. of 0.02 N NaOH in paragraph (9) times

100
0.00374 x —————— gives the per-
sample x 4/5

centage of pyrethrin II in the sample.

Note: Test a sample of all extracts and concentrates for freedom from oxidized pyrethrins (which are insecticidally inert) by diluting to approximately 200 mg. of pyrethrins per 100 ml. with petroleum ether. If the solution is not clear, treat the analytical sample in the same manner adding 1 g. of filter cel to the solution. Place flask in refrigerator for at least two hours, filter and wash quantitatively through a Gooch crucible. Evaporate the solvent, proceed as in paragraph (11) or (12).



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HOLBROOK, MASSACHUSETTS

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New Federal Insecticide Act

(H. R. 1237)

AN ACT

TO regulate the marketing of economic poisons and devices, and for other purposes.

TITLE

SECTION 1. This Act may be cited as the "Federal Insecticide, Fungicide, and Rodenticide Act."

DEFINITIONS

SEC. 2. For the purposes of this Act—

a. The term "economic poison" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, fungi, weeds, and other forms of plant or animal life or viruses, except on or in living man or other animals, which the Secretary shall declare to be a pest.

b. The term "device" means any instrument or contrivance intended for trapping, destroying, repelling, or mitigating insects or rodents or destroying, repelling, or mitigating fungi or such other pests as may be designated by the Secretary, but not including equipment used for the application of economic poisons when sold separately therefrom.

c. The term "insecticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects which may be present in any environment whatsoever.

d. The term "fungicide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any fungi.

e. The term "rodenticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating rodents or any other vertebrate animal which the Secretary shall declare to be a pest.

f. The term "herbicide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any weed.

g. The term "weed" means any plant which grows where not wanted.

h. The term "insect" means any of the numerous small invertebrate animals generally having the body more or less obviously segmented for the most part belonging to the class insecta, comprising six-legged usually winged forms, as, for example, beetles, bugs, bees, flies, and to other allied classes of arthropods whose

members are wingless and usually have more than six legs, as, for example, spiders, mites, ticks, centipedes, and wood lice.

i. The term "fungi" means all non-chlorophyll-bearing thallophytes (that is, all non-chlorophyll-bearing plants of a lower order than mosses and liverworts) as, for example, rusts, smuts, mildews, molds, yeasts, and bacteria, except those on or in living man or other animals.

j. The term "ingredient statement" means either—

(1) a statement of the name and percentage of each active ingredient, together with the total percentage of the inert ingredients in the economic poison; or

(2) a statement of the name of each active ingredient, together with the name of each and total percentage of the inert ingredients, if any there be, in the economic poison (except option 1 shall apply if the preparation is highly toxic to man, determined as provided in section 6 of this Act);

and, in addition to (1) or (2) in case the economic poison contains arsenic in any form, a statement of the percentages of total and water soluble arsenic, each calculated as elemental arsenic.

k. The term "active ingredient" means an ingredient which will prevent, destroy, repel, or mitigate insects, fungi, rodents, weeds or other pests.

l. The term "inert ingredient" means an ingredient which is not active.

m. The term "antidote" means a practical immediate treatment in case of poisoning and includes first-aid treatment.

n. The term "person" means any individual, partnership, association, corporation, or any organized group of persons whether incorporated or not.

o. The term "Territory" means any Territory or possession of the United States, excluding the Canal Zone.

p. The term "Secretary" means the

Secretary of Agriculture.

q. The term "registrant" means the person registering any economic poison pursuant to the provisions of this Act.

r. The term "label" means the written, printed, or graphic matter on, or attached to, the economic poison or device or the immediate container thereof, and the outside container or wrapper of the retail package, if any there be, of the economic poison or device.

s. The term "labeling" means all labels and other written, printed, or graphic matter—

(1) upon the economic poison or device or any of its containers or wrappers;

(2) accompanying the economic poison or device at any time;

(3) to which reference is made on the label or in literature accompanying the economic poison or device, except to current official publications of the United States Departments of Agriculture and Interior, the United States Public Health Service, State experiment Stations, State agricultural colleges, and other similar Federal or State institutions or agencies authorized by law to conduct research in the field of economic poisons;

t. The term "adulterated" shall apply to any economic poison if its strength or purity falls below the professed standard or quality as expressed on its labeling or under which it is sold, or if any substance has been substituted wholly or in part for the article, or if any valuable constituent of the article has been wholly or in part abstracted.

u. The term "misbranded" shall apply—

(1) to any economic poison or device if its labeling bears any statement, design, or graphic representation relative thereto or to its ingredients which is false or misleading in any particular;

(2) to any economic poison—

(a) if it is an imitation of or is offered for sale under the name of another economic poison;

(b) if its labeling bears any reference to registration under this Act;

(c) if the labeling accompanying it does not contain directions for use which are necessary and if complied with adequate for the protection of the public;

(d) if the label does not contain a warning or caution statement which may be necessary and if complied with adequate to prevent injury to living man and other vertebrate animals vegetation, and useful invertebrate animals;

(e) if the label does not bear an ingredient statement on that part of the immediate container and on the outside container or wrapper, if there be one, through which the ingredient statement on the immediate container cannot be clearly read, of the retail package which is presented or displayed under customary conditions of purchase: *Provided*, That the Secretary may permit the ingredient statement to appear prominently on some other part of the container, if the size or form of the container makes it impracticable to place it on the part of the retail package which is presented or displayed under customary conditions of purchase.

(f) if any word, statement, or other information required by or under authority of this Act to appear on the label or labeling is not prominently placed thereon with such conspicuously (as compared with other words, statements, designs, or graphic matter in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use; or

(g) if in the case of an insecticide, fungicide, or herbicide when used as directed or in accordance with commonly recognized practice it shall be injurious to living man or other vertebrate animals, or vegetation, except weeds, to which it is applied, or to the person applying such economic poison.

PROHIBITED ACTS

SEC. 3. (a) It shall be unlawful for any person to distribute, sell, or offer for sale in any Territory or in the District of Columbia, or to ship or deliver for shipment from any State, Territory, or the District of Columbia to any other State, Territory,

or the District of Columbia, or to any foreign country, or to receive in any State, Territory, or the District of Columbia from any other State, Territory, or the District of Columbia, or foreign country, and having so received, deliver or offer to deliver in the original unbroken package to any other person, any of the following:

(1) Any economic poison which has not been registered pursuant to the provisions of section 4 of this Act, or any economic poison if any of the claims made for it or any of the directions for its use differ in substance from the representations made in connection with its registration, or if the composition of an economic poison differs from its composition as represented in connection with its registration: *Provided*, That in the discretion of the Secretary, a change in the labeling or formula of an economic poison may be made within a registration period without requiring reregistration of the product.

(2) Any economic poison unless it is in the registrant's or the manufacturer's unbroken immediate container, and there is affixed to such container, and to the outside container or wrapper of the retail package, if there be one through which the required information on the immediate container cannot be clearly read, a label bearing—

(a) the name and address of the manufacturer, registrant, or person for whom manufactured;

(b) the name, brand, or trademark under which said article is sold; and

(c) the net weight or measure of the content: *Provided*, That the Secretary may permit reasonable variations.

(3) Any economic poison which contains any substance or substances in quantities highly toxic to man, determined as provided in section 6 of this Act, unless the label shall bear, in addition to any other matter required by this Act—

(a) the skull and crossbones;

(b) the word "poison" prominently (IN RED) on a background of distinctly contrasting color; and

(c) a statement of an antidote for the economic poison.

(4) The economic poisons commonly known as standard lead arsenate, basic lead arsenate, calcium arsenate, magnesium arsenate, zinc arsenate, zinc arsenite, sodium fluoride, sodium fluosilicate, and barium fluosilicate unless they have been distinctly colored or discolored as provided by regulations issued in accordance with this Act, or any other white powder economic poison which the Secretary, after investigation of and after public hearing on the necessity for such action for the protection of the public health and

the feasibility of such coloration or discoloration, shall, by regulation, require to be distinctly colored or discolored, unless it has been so colored or discolored: *Provided*, That the Secretary may exempt any economic poison to the extent that it is intended for a particular use or uses from the coloring or discoloring required or authorized by this section if he determines that such coloring or discoloring for such use or uses is not necessary for the protection of the public health.

(5) Any economic poison which is adulterated or misbranded or any device which is misbranded.

b. Notwithstanding any other provision of this Act, no article shall be deemed in violation of this Act when intended solely for export to any foreign country and prepared or packed accordingly to the specifications or directions of the foreign purchaser.

c. It shall be unlawful—

(1) for any person to detach, alter, deface, or destroy, in whole or in part, any label or labeling provided for in this Act or the rules and regulations promulgated hereunder, or to add any substance to, or take any substance from, an economic poison in a manner that may defeat the purpose of this Act;

(2) for any manufacturer, distributor, dealer, carrier, or other person to refuse, upon a request in writing specifying the nature or kind of economic poison or device to which such request relates, to furnish to or permit any person designated by the Secretary to have access to and to copy such records as authorized by section 5 of this Act;

(3) for any person to give a guaranty or undertaking provided for in section 7 which is false in any particular, except that a person who receives and relies upon a guaranty authorized under section 7 may give a guaranty to the same effect, which guaranty shall contain in addition to his own name and address the name and address of the person residing in the United States from whom he received the guaranty or undertaking; and

(4) for any person to use for his own advantage or to reveal, other than to the Secretary, or officials or employees of the United States Department of Agriculture, or other Federal agencies, or to the courts in response to a subpoena, or to physicians, and in emergencies to pharmacists and other qualified persons, for use in the preparation of antidotes, in accordance with such directions as the Secretary may prescribe, any information relative to formulas of products acquired by authority of section 4 of this Act.

REGISTRATION

SEC. 4. a. Every economic poison which is distributed, sold, or offered for sale in any Territory or the District of Columbia, or which is shipped or delivered for shipment from any State, Territory, or the District of Columbia to any other State, Territory, or the District of Columbia, or which is received from any foreign country shall be registered with the Secretary: *Provided*, That products which have the same formula, are manufactured by the same person, the labeling of which contains the same claims, and the labels of which bear a designation identifying the product as the same economic poison may be registered as a single economic poison; and additional names and labels shall be added by supplement statements; the registrant shall file with the Secretary a statement including—

(1) the name and address of the registrant and the name and address of the person whose name will appear on the label, if other than the registrant;

(2) the name of the economic poison;

(3) a complete copy of the labeling accompanying the economic poison and a statement of all claims to be made for it, including the directions for use; and

(4) if requested by the Secretary, a full description of the tests made and the results thereof upon which the claims are based.

b. The Secretary, whenever he deems it necessary for the effective administration of this Act, may require the submission of the complete formula of the economic poison. If it appears to the Secretary that the composition of the article is such as to warrant the proposed claims for it and if the article and its labeling and other material required to be submitted comply with the requirements of section 3 of this Act, he shall register it.

c. If it does not appear to the Secretary that the article is such as to warrant the proposed claims for it or if the article and its labeling and other material required to be submitted do not comply with the provisions of this Act, he shall notify the registrant of the manner in which the article, labeling, or other material required to be submitted fail to comply with the Act so as to afford the registrant an opportunity to make the corrections necessary. If, upon receipt of such notice, the registrant insists that such corrections are not necessary and requests in writing that it be registered, the Secretary shall register the article, under protest, and such registration shall be accompanied by a warning, in writing, to the registrant of the apparent failure of the article to comply with the provisions of this Act. In order to protect the public, the Secretary,

on his own motion, may at any time, cancel the registration of an economic poison and in lieu thereof issue a registration under protest in accordance with the foregoing procedure. In no event shall registration of an article, whether or not protested, be construed as a defense for the commission of any offense prohibited under section 3 of this Act.

d. Notwithstanding any other provision of this Act, registration is not required in the case of an economic poison shipped from one plant to another plant operated by the same person and used solely at such plant as a constituent part to make an economic poison which is registered under this Act.

e. The Secretary is authorized to cancel the registration of any economic poison at the end of a period of five years following the registration of such economic poison or at the end of any five-year period thereafter, unless the registrant, prior to the expiration of each such five-year period, requests in accordance with the regulations issued by the Secretary that such registration be continued in effect.

BOOKS AND RECORDS

SEC. 5. For the purposes of enforcing the provisions of this Act, any manufacturer, distributor, carrier, dealer, or any other person who sells or offers for sale, delivers or offers for delivery, or who receives or holds any economic poison or device subject to this Act, shall, upon request of any employee of the United States Department of Agriculture or any employee of any State, Territory, or political subdivision, duly designated by the Secretary, furnish or permit such person at all reasonable times to have access to, and to copy all records showing the delivery, movement, or holding of such economic poison or device, including the quantity, the date of shipment and receipt, and the name of the consignor and consignee; and in the event of the inability of any person to produce records containing such information, all other records and information relating to such delivery, movement, or holding of the economic poison or device. Notwithstanding this provision, however, the specific evidence obtained under this section shall not be used in a criminal prosecution of the person from whom obtained.

ENFORCEMENT

SEC. 6. a. The Secretary (except as otherwise provided in this section) is authorized to make rules and regulations for carrying out the provisions of this Act, including the collection and examination of samples of economic poisons and devices subject to this Act and the determination and establishment of suitable names to be used in the ingredient statement. The Secretary is, in addition, authorized after opportunity for hearing—

(1) to declare a pest any form of plant or animal life or virus which is

injurious to plants, man, domestic animals, articles, or substances;

(2) to determine economic poisons, and quantities of substances contained in economic poisons, which are highly toxic to man; and

(3) to determine standards of coloring or discoloring for economic poisons, and to subject economic poisons to the requirements of section 3a (4) of this Act.

b. The Secretary of the Treasury and the Secretary of Agriculture shall jointly prescribe regulations for the enforcement of section 10 of this Act.

c. The examination of economic poisons or devices shall be made in the United States Department of Agriculture or elsewhere as the Secretary may designate for the purpose of determining from such examination whether they comply with the requirements of this Act, and if it shall appear from any such examination that they fail to comply with the requirements of this Act, the Secretary shall cause notice to be given to the person against whom criminal proceedings are contemplated. Any person so notified shall be given an opportunity to present his views, either orally or in writing, with regard to such contemplated proceedings, and if in the opinion of the Secretary it appears that the provisions of this Act have been violated by such person, then the Secretary shall certify the facts to the proper United States attorney, with a copy of the results of the analysis or the examination of such article: *Provided*, That nothing in this Act shall be construed as requiring the Secretary to report for prosecution or for the institution of libel proceedings minor violations of this Act whenever he believes that the public interest will be adequately served by a suitable written notice of warning.

d. It shall be the duty of each United States attorney, to whom the Secretary or his agents shall report any violation of this Act, to cause appropriate proceedings to be commenced and prosecuted in the proper courts of the United States without delay.

e. The Secretary shall, by publication in such manner as he may prescribe, give notice of all judgments entered in actions instituted under the authority of this Act.

EXEMPTIONS

SEC. 7. a. The penalties provided for a violation of section 3a of this Act shall not apply to—

(1) any person who establishes a guaranty signed by, and containing the name and address of, the registrant or person residing in the United States from whom he purchased and received in good faith the article in the same unbroken package, to the

(Turn to Page 230)

Antiseptic, Disinfectant Terminology

By

AUSTIN M. PATTERSON, PH. D.

Antioch College, Yellow Springs, O.

THE use of technical and semi-technical words in commerce has increased rapidly with the development of research and the growth of advertising. The modern market affords an amazing variety of articles, the manufacture, merits, and use of which are discussed in a voluminous literature.

It is desirable that the scientific terms employed should convey clear meanings to all concerned, or at least not give a wrong understanding. Words do not always have one simple sense. A language is a living, growing organism, and its words take on color, gain fresh content, acquire new senses and lose old ones as the years pass. It is the task of the dictionary worker to discover and set forth the present meanings of words in the light of their history.

In this article definitions and comments are presented for the following terms: antiseptic, bactericidal, bactericide, deodorant, deodorize, disinfect, disinfectant, disinfection, disinfest, germicidal, germicide, insecticidal, insecticide, prophylactic, sterilization, and sterilize.

The conclusions are based chiefly on a study of the more widely disseminated literature in English, especially reference books both scientific and general, but also on conversations and correspondence with physicians, bacteriologists, government officials, manufacturers of chemicals, and laymen.

GERMICIDE, -DAL

Definitions—

germicide, n. Anything that destroys

* Reprinted from American Journal of Public Health, Vol. XXII, No. 5, May 1932. The investigation herein reported was conducted with the aid of a grant from The National Association of Insecticide and Disinfectant Manufacturers.

germs (microorganisms); applied especially to agents that kill disease germs.

germicidal, adj. Destroying germs; pertaining to germicides.

Comments—The word *germ** in the sense of microorganism, is a popular one, but it has been used in forming the convenient terms *germicide* and *germicidal*, which find extensive use in technical, as well as popular literature. There seems to be little disagreement as to the meaning of these terms: a substance is a germicide if it will kill germs and whether or not it will do so can be experimentally determined. As the words are ordinarily used, the germs referred to are those of disease. The chief point of controversy that could arise is with reference to differences in resistance. In practice it is assumed that a substance represented as a germicide, when used as directed, will kill all ordinary disease germs, but is not necessarily required to be capable of destroying bacterial spores. In combating diseases such as anthrax or tetanus, caused by spore-forming bacteria, germicides or procedures specially effective against spores will be required.

BACTERICIDE, -DAL

Definitions—

bactericide, n. Anything that destroys bacteria.

bactericidal, adj. Destroying bacteria; pertaining to bactericides.

Comments—These terms are synonymous in large part with *germicide* and *germicidal*, the chief difference being that the two latter are somewhat broader, inasmuch as they may include microorganisms other than bacteria. *Bactericide* is a precise term applying only to bacteria and to bacteria of all kinds; in practice, however, it is ordinarily regarded in the same light as *germicide* with respect to the resistance of different bacteria; that is, a substance, in order to be called a bactericide, is not necessarily required to be capable of destroying bacterial spores.

ANTISEPTIC

Definitions—

antiseptic, n. A substance that opposes sepsis, putrefaction or decay; one that prevents or arrests the growth or action of microorganisms, either by inhibiting their activity or by destroying them; used

especially of agents applied to living tissue.

antiseptic, adj. 1. Having the properties of an antiseptic; opposing sepsis, putrefaction or decay; preventing or arresting the growth or action of microorganisms, especially on or in living tissue. 2. Pertaining to, or characterized by, the use of antiseptics; as *antiseptic surgery*.

Comments—The word *antiseptic* is derived from two Greek words, *anti*, against, and *septikos*, putrefactive or rotting. The first known use of it in English, both as an adjective and as a noun, is (according to the *Oxford English Dictionary*) in the *Gentleman's Magazine* in 1751, where sea salt, myrrh and acids are spoken of as antiseptics. In 1774 Priestley remarked on the antiseptic power of "nitrous air" (nitrous oxide). At the time that the word came into existence it was not understood that putrefaction and decay are produced by the agency of microorganisms, but when this became known, the "preventing or arresting the growth or action of microorganisms" took its place naturally in the idea conveyed by the word. Apparently the earliest use of the term was with reference to substances to be applied as medicaments to sores and wounds, and the principal use even today is of substances applied to some part of the body, either externally or internally. The word *antiseptic* might be, and has been, applied to substances used to prevent decay in other connections, as of foods or timber, but such materials are usually called *preservatives* rather than antiseptics. It will be noticed that, as "antiseptic" is used, it may imply long-continued contact.

Antiseptic and Germicide—Since the killing of microorganisms is the most effective way to prevent their growth it would seem a logical conclusion that any germicide may act as an antiseptic. This appears to be the prevailing view. A great many writers who discuss the matter state or imply that an antiseptic may act either by inhibiting the growth of microorganisms or by killing them. A smaller number, however, limit the action of an antiseptic to the prevention or arresting of bacterial growth *without* killing the organisms.

Now it is quite natural that, since we have other words such as *germicide* and *bactericide* to denote agents which actually kill microorganisms, the idea that an antiseptic may arrest growth without kill-

ing should be emphasized; but the majority of writers do not go as far as to contrast *antiseptic* with *germicide* and to regard the two terms as mutually exclusive. It seems best in accord with the history of the word and with prevailing usage to apply the term *antiseptic* to any agent which prevents further bacterial action, whether it does so by killing the bacteria or not. If this view be taken, any germicide might theoretically serve as an antiseptic. In practice there are exceptions. The action of certain non-material agencies, as sunlight and heat, is often referred to as germicidal but not as antiseptic. Again, many germicides cannot be used as antisepsics because of their harmful effect upon the body tissues. Bearing such exceptions in mind, however, we may say that in general a germicide is an antiseptic or has antiseptic properties.

On the other hand, it is not correct to say that an antiseptic is necessarily a germicide or has germicidal properties, for there are substances which are able to arrest the growth of microorganisms but are not germicides. Here again usage is not unanimous, for certain writers, chiefly those influenced by the practice of antiseptic surgery introduced by Lister, regard the action of antisepsics as a destroying one.

In an investigation of the relative number of authorities supporting each point of view, 165 definitions of *antiseptic* were studied, ranging in date from 1819 to 1930. Twenty, mostly early, make no reference to bacteria. Of the remainder, 66 state or imply that antisepsics arrest or destroy microorganisms, 27 state that they arrest but do not destroy, 12 that they destroy, and 10 that they inhibit growth (without stating how). Most of the remaining 30 definitions are not entirely clear, though a few represent divergent views, for example, that antisepsics neutralize toxins.

To illustrate recent usage on this point, 53 citations from works published in 1921 or later may be summarized as follows: (1) Describing an antiseptic as inhibiting or preventing the growth of microorganisms without necessarily killing them, 37. Of these, 12 are from bacteriological, 11 from medical, and 14 from miscellaneous sources. Three say definitely that antisepsics do not kill bacteria and 4 more distinguish between antiseptic action as non-killing and disinfectant action as killing; the rest either say or imply that antisepsics may kill or else do not mention the question. (2) Stating that antisepsics destroy bacteria, 6. Of these, 2 are from surgeons, 1 is from a chemical dictionary which quotes alcohol and boric acid as examples, and 1 considers the "inhibiting" sense preferable. (3) Not giving a clear issue, or controversial, 10.

It should be remembered that whether a given substance is a germicide or an antiseptic, or neither, depends on several factors. One is the *strength* in which the agent is used; it may be a germicide in a solution of a certain concentration and only an inhibiting agent at a lower concentration. The *time of contact* and *mode*

of application must also be taken into account; a solution which is germicidal when in contact with the material for 30 minutes may not be so for an exposure of 5 minutes, and imperfect contact of course lessens effectiveness. The *nature of the microorganism* must also be considered, since the resistance of different kinds varies greatly, so that a substance might be germicidal for one variety and only inhibitory toward another, within a definite range of concentration. And there are still other factors, such as the *temperature*, the *abundance of the microorganisms* and the *nature of the material* in which the microorganisms are found.

DISINFECTANT, -TANT, -TION

Definitions—

disinfectant, *n.* An agent that frees from infection; usually, a chemical agent which destroys disease germs or other harmful microorganisms (but not, ordinarily, bacterial spores); commonly used of substances applied to inanimate objects.

disinfectant, *adj.* Freeing from infection, especially by destroying disease germs or other harmful microorganisms.

disinfect, *v.t.* To free from infection, especially by destroying disease germs or other harmful microorganisms.

disinfection, *n.* The act or process of disinfecting.

Comments—The verb *disinfect* first appears in the literature at about the beginning of the 17th century, and the other forms much later. Like *antiseptic*, this group of words came into use before the germ theory of disease originated. It was believed that certain "effluvia" existed in the air and on furniture, clothing, etc., and communicated certain diseases; hence, the infection must either be removed or destroyed. It is now recognized that the infection is caused by microorganisms, but we continue to use *disinfectant* as a convenient term for any agent that accomplishes the result of freeing from infection.

Wilcox (*Pharmacology and Therapeutics*, ed. 7, p. 13) states that "the term *disinfectant*, by extension, is applied to those agents which kill non-pathogenic bacteria, as well as to those which destroy disease germs." This, it seems, involves an extension of the meaning of the word "disinfection" to include freeing from other undesirable microorganisms besides those causing human disease.

Disinfectant and Germicide—For some time after the advent of the germ theory of disease, authors hesitated to describe the action of a disinfectant as being wholly or principally the destruction of microorganisms. They spoke of "restraining" or "neutralizing" the germs, of destroying the poisons produced, of deodorizing, etc. It would seem that their idea of "ridding of infection" was clear but not the precise method by which disinfectants operate.

Popularly this vagueness persisted much longer. Albert Buck (*Reference Handbook of the Medical Sciences*, 1894) says: "Popularly, the term *disinfection* is used in a much broader sense. Any chemical agent which destroys or masks bad odors, or which arrests putrefactive decomposition, is spoken of as a *disinfectant* . . . This popular use of the term has led to much misapprehension." This misapprehension seems to have decreased with the spread of scientific knowledge.

Of 143 definitions of "disinfectants," dating from 1854 to 1930, 25 (chiefly of earlier dates) make no reference to microorganisms. Of the remainder, 95 define disinfectants as germ destroyers, 9 state that they may also act by removing the germs, and 8 say that they either destroy germs or arrest their action. Of the 95 citations, 52 define disinfectants as destroyers of *disease germs*, 34 merely say that they destroy germs or are germicides, while 9 specifically state that they destroy all germs, non-pathogenic as well as pathogenic.

Hence it seems to be generally expected that any substance used as a disinfectant will destroy the cause of infection, that is, will act as a germicide.

The word *disinfectant* still carries with it much of its original connotation. It suggests the cleaning of sick rooms, clothing, bedding, lavatories, stables and in fact of any places or things that might harbor disease. By contrast, *germicide* is a precise, colorless word, conveying its literal meaning and little more. Aside from their history and connotations, however, *disinfectant* and *germicide* appear today to have the same meaning when applied to substances used in fighting disease.

Disinfectant and Antiseptic—If we accept certain conclusions from the above discussion, namely, that the substances called disinfectants are germicides, and also that in general germicides may act as antisepsics but that antisepsics are not necessarily germicides, then it follows that disinfectants may (theoretically at least) act as antisepsics, but that antisepsics may not necessarily act as disinfectants. Due attention should of course be paid to the different connections in which the two words are used.

STERILIZE, -ZATION

sterilize, *v.t.* To render sterile, that is, free from all living microorganisms.

sterilization, *n.* The act or process of sterilizing, or freeing from all living microorganisms.

Comments—These are exact terms, which came into use (in the sense under discussion) to express a precise idea, namely the freeing of a material, container, or space from living microorganisms of all kinds. There is no distinction between disease germs and other germs, or between resistant and nonresistant varieties or forms. If a thing has been

(Turn to Page 213)



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CRESYLIC ACID
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THE BARRETT DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

N.A.I.D.M. SPECIFICATIONS

*Official Specifications of the National Association
of Insecticide and Disinfectant Manufacturers for*

INSECTICIDES and DISINFECTANTS

OFFICIAL SPECIFICATIONS Liquid Household Spray Insecticide

(Adopted December, 1936)

1. A household spray oil type insecticide shall be harmless to man and warm blooded household animals, when used as directed.

2. When sprayed, as directed, it shall not stain fabrics, wall paper and general household furnishings, that are not stained by dry cleaning fluid.

3. When used in the customary manner it shall not contaminate closed packages of food materials commonly found in homes.

4. It shall not corrode metals.

5. It shall have no objectionable odor, and no particular odor shall be specified.

6. It shall have a flashpoint not less than 125° F. when tested in the Tagliabue closed cup.

7. It is recommended that it be purchased on a direct competitive basis with the Official Test Insecticide of the National Association of Insecticide and Disinfectant Manufacturers, Inc., by using the method of test specified in literature accompanying the Official Test Insecticide.

8. The Association hereby adopts the following grades (the plus or minus figures shown therein designating the points over or under the Official Test Control Insecticide when the "Unknown" and the "Control" are tested at the same time in the same manner):

Designation	Grade	Kill	Classification
AA	Excellent	+ 16 or higher	
A	Very Good	+ 6 to + 15	
B	Equal to Official Test Insecticide	+ 5 to — 5	

• •

1: Standard Specifications for Liquid Hypochlorites Disinfectant, Deodorant and Germicide

Composition—Liquid hypochlorites are available in three forms: *one*, sodium hypochlorite alkaline with sodium hydrate, sodium carbonate or the other alkaline salts; *two*, hypochlorites which are essentially sodium hypochlorite and alkaline with calcium hydrate; and *three*, calcium hypochlorite solutions alkaline with calcium hydrate. A delivery of any one of these shall be satisfactory unless otherwise specified.

Physical Requirements—The hypochlorite solution shall be a homogeneous liquid. It shall be miscible with water of zero hardness at 20° C. (68° F.) in all proportions. It shall be ready for dilution when delivered.

Chemical Requirements—The available chlorine content which shall not be less than 2.5 per cent by weight shall be clearly stated on the label. Its rate of deterioration shall not be more than 10 per cent of its original available chlorine content when stored in the original container for six months in a cool, dark place at maximum temperature of 68° F. (20° C.).

Identification—Each container shall be marked with the name of the material, the brand (if any) of the material, the name of the manufacturer, net contents therein, and date of manufacture.

Packing—The hypochlorite shall be delivered in standard commercial containers of the size as called for in the schedule. Each container holding one gallon or more shall be stoppered with a closure having vent.

2: Standard Specifications for Pine Oil Disinfectant

1. The product shall be manufactured from pure steam distilled pine oil and emulsifying agent and remain clear and homogeneous under normal and reasonable conditions of storage.

2. It shall contain not less than 60 per cent by weight steam distilled pine oil.

3. It shall contain not more than 10 per cent water.

4. The phenol coefficient shall be determined by the F.D.A. Method of Test against *B. typhosus* and be clearly stated on the label attached to each shipping container.

5. It shall not contain kerosene or other petroleum distillates.

6. The product shall make a stable emulsion in water of zero hardness at 20° C. (68° F.) when diluted at the rate of 5 per cent. The emulsion shall stand for at least twenty-four hours showing no sign of oil float (unsaponified or clear free oil).

3: Standard Specifications for Emulsifying Type Coal Tar Disinfectant

1. It shall be made from phenols of coal tar or petroleum origin, or combina-

tions of such phenols with coal tar oils, and an emulsifying agent.

2. It shall contain not less than 65 per cent by weight of phenols and coal tar oils.

3. It shall contain not over 10 per cent of water, by weight.

4. It shall not contain kerosene or any petroleum distillates other than phenols of petroleum origin.

5. The phenol coefficient shall be determined by the Food and Drug Administration Method using *B. typhosus* as test organism, and shall be clearly stated on the label attached to each shipping container.¹

6. It shall make milky emulsions with water of zero hardness at 20° C. (68° F.) when diluted in the ratio of 5 parts of disinfectant to 95 parts of water for disinfectants having phenol coefficients of 10 or under; and in the ratio of 2 parts of disinfectant to 98 parts of water for disinfectants having phenol coefficients of over 10. These emulsions shall show not more than a trace of oily float or sediment when stored for 5 hours at room temperature.

7. It shall remain limpid, showing no sign of naphthalene crystallization down to 0° C. in 3 hours.

8. It shall contain less than 5 per cent of benzophenol.

9. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

Certification and Labeling

10. The following form of statement on labels², invoices, etc., is recommended:

"The Company certifies this phenolic disinfectant (emulsifying type) to conform to all requirements of the standard adopted by the NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MANUFACTURERS, INC., and recorded as Commercial Standard CS70-.... by the National Bureau of Standards of the U. S. Department of Commerce. Phenol coefficient....."

¹ This type of disinfectant is available with phenol coefficients ranging from 2 to 30, and higher. Contract buyers should specify the phenol coefficient desired.

² When used on labels this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

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DISINFECTANTS:

Coal Tar
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Quaternary
Cresylic-Cresol
Bets-Trol Germicide
Arsenical Dip, B. A. I.

INSECTICIDES:

Concentrates
Synthetics
Roach Sprays—Fly Sprays
DDT—Cattle Sprays
Mosquito Larvaecide

RAW MATERIALS, Cresylic Acids, Imported and Domestic:

Crude Carbolic Acids
Tar Acid Oils
Creosote Oils
Shingle Stain Oil
Nev-A-Rot Stainless
Pentachlorophenol Concentrates

WEED KILLERS, 2, 4-D Amino Salts and Esters: Arsenical types

HOSPITAL GERMICIDES:

Cresol Compound U. S. P.
50% Technical Cresylic Solution
Cre-O-Syn Surgical Disinfectant
HD-10 Germicide

FLOOR CLEANERS:

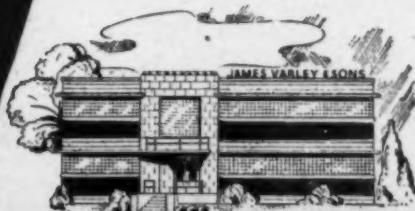
SS-96 Liquid Soapless Detergent
SS-96 Powdered Soapless Detergent
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4: Standard Specifications for Cresylic Disinfectants

Scope

1. This standard covers materials, physical and chemical properties, and certification of quality of phenolic disinfectant (soluble type), classified under two groups as follows:

(a) Group I—Phenolic disinfectants having phenol coefficients from 1.5 to 5¹.

(b) Group II—Phenolic disinfectants having phenol coefficients above 5.

Detail Requirements (Group I)

2. Group I disinfectants shall be made from cresol or cresylic acid of coal tar or petroleum origin, and a dissolving agent.

3. Group I disinfectants shall contain not less than 50 per cent of cresol or cresylic acid, as determined by the method prescribed in U. S. Pharmacopoeia XI for the assay of cresol in the Saponated Solution of Cresol.

4. Group I disinfectants shall contain not more than 25 per cent by weight of inert ingredients (water plus glycerine, and organic solvents, if any).

5. The phenol coefficient of Group I disinfectants shall be determined by the Food and Drug Administration Method using *B. typhosus* as the test-organism, and shall be clearly stated on the label attached to each shipping container.

6. Group I disinfectants shall contain less than 5 per cent of benzophenol.

7. Group I disinfectants shall make clear solutions with water of zero hardness at 20° C. (68° F.) within the concentration range of from 1 to 4 per cent; such solutions, when kept in closed containers, shall remain either practically clear or become only slightly opalescent when allowed to stand for 24 hours at 20° C. (68° F.) away from direct light.

8. Group I disinfectants shall show no soap separation when cooled down to 0° C. and held at this temperature for 3 hours.

Detail Requirements (Group II)

9. Group II disinfectants shall be made from phenols of coal tar or petroleum origin, and a dissolving agent.

10. Group II disinfectants shall contain not less than 50 per cent of phenols².

11. Group II disinfectants shall contain not more than 25 per cent by weight of inert ingredients (water plus glycerine and organic solvents, if any).

12. The phenol coefficients of Group II disinfectants shall be determined by the Food and Drug Administration Method using *B. typhosus* as the test-organism,

¹The disinfectants of Group I fall within the type commonly designated "Cresylic disinfectants."

²A satisfactory method of assay of all possible types of disinfectants comprised by Group II is not available, but work on the subject is in progress.

³When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

and shall be clearly stated on the label attached to each shipping container.

13. Group II disinfectants shall contain less than 5 per cent of benzophenol.

14. Group II disinfectants shall make clear solutions with water of zero hardness at 20° C. (68° F.) at concentrations of 2 per cent or less; such solutions, when kept in closed containers, shall remain either practically clear or become only slightly opalescent when allowed to stand for 24 hours at 20° C. (68° F.) away from direct light.

15. Group II disinfectants shall show no soap separation when cooled down to 0° C. and held at this temperature for 3 hours.

Certification and Labeling

16. The following form of statement on labels*, invoices, etc., is recommended:

"The Company certifies this disinfectant to conform to all requirements for (Group I)

(Group II) of the standard adopted by the NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MANUFACTURERS, INC., and recorded as Commercial Standard CS-1-..., by the National Bureau of Standards of the U. S. Department of Commerce.

Phenol Coefficient....."

N.A.I.D.M. DEFENSE EMERGENCY SPECIFICATION "A" FOR PHENOLIC DISINFECTANT EMULSIFYING TYPE

Purpose

1. The purpose of this defense emergency specification is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodities covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of phenolic disinfectant (emulsifying type), manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This specification covers materials, physical and chemical properties, and certification of quality of phenolic disinfectant (emulsifying type).

Detail Requirements

3. The disinfectant shall not contain kerosene or any petroleum distillate other than phenols of petroleum origin.

4. The phenol coefficient shall be determined by the Food and Drug Administration method, using *B. typhosus* as test organism, and shall be clearly stated on the label attached to each shipping container.

5. The disinfectant shall make milky emulsions with water of zero hardness at 20° C. (68° F.) when diluted in the ratio of 5 parts of disinfectant to 95 parts of water for disinfectants having phenol

coefficients of 10 or under; and in the ratio of 2 parts of disinfectant to 98 parts parts of water for disinfectants having phenol coefficients of over 10. These emulsions shall show not more than a trace of oily float or sediment when stored for 5 hours at room temperature.

6. The disinfectant shall remain limpid, showing no sign of naphthalene crystallization down to 0° C. in 3 hours.

7. The disinfectant shall contain less than 5 per cent of benzophenol (phenol, C₆H₅OH).

8. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

Certification and Labeling

9. The following form of statement on labels*, invoices, etc., is recommended:

The Company certifies this phenolic disinfectant (emulsifying type) to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Defense Emergency Disinfectant Specification "A" by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. DEFENSE EMERGENCY SPECIFICATION "B" FOR PHENOLIC DISINFECTANT SOLUBLE TYPE

Purpose

1. The purpose of this defense emergency specification is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodities covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of phenolic disinfectant (soluble type), manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This specification covers materials, physical and chemical properties and certification of quality of phenolic disinfectant, soluble type.

General Requirements

3. The disinfectant shall be made from phenols of coal tar or petroleum origin and a dissolving agent.

4. The disinfectant shall not contain kerosene or any petroleum distillate other than phenols of petroleum origin.

5. The phenol coefficient shall be determined by the Food and Drug Administration method, using *B. typhosus* as test organism, and shall be clearly stated on the label attached to each shipping container.

6. The disinfectant shall make either a clear or opalescent mixture with dis-

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tilled water at 20° C. (68° F.) within the concentration range of 1 to 4 per cent; when opalescent, it shall become practically clear upon addition of a few drops of a 10 per cent KOH solution.

7. It shall show no soap separation when cooled down to 0° C. and held at this temperature for 3 hours.

Certification and Labeling

8. The following form of statement on labels*, invoices, etc., is recommended:

The Company certifies this phenolic disinfectant (soluble type) to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Defense Emergency Disinfectant Specification "B" by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. SPECIFICATION "C" FOR PHENOLIC DISINFECTANT FROM SYNTHETIC PHENOLS

Purpose

1. The purpose of this commercial standard is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodity covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of phenol disinfectant from synthetic phenols, manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This specification covers materials, physical and chemical properties and certification of quality of phenolic disinfectants of synthetic origin.

Detail Requirements

3. The disinfectant shall be made from synthetic phenols of the type comprising alkyl, aryl, and aralkyl phenols, or their chlorinated or brominated derivatives, and a dissolving or emulsifying agent.

4. The phenol coefficient shall be determined by the Food and Drug Administration method, using *B. typhosus* as the test organism, and shall be clearly stated on the label attached to each shipping container.

5. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

6. The disinfectant shall make stable emulsions or solutions with water of zero hardness at 20° C. (68° F.); they shall show not more than a trace of float or sediment when stored for 5 hours at room temperature.

Certification and Labeling

7. The following form of statement on labels*, invoices, etc., is recommended:

The Company certifies this phenolic disinfectant from synthetic phenols to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Specification "C" by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. SPECIFICATION "D" FOR FORTIFIED PHENOLIC DISINFECTANT

Purpose

1. The purpose of this commercial standard is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodities covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of a fortified phenolic disinfectant manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This standard covers materials, physical and chemical properties, and certification of quality of fortified phenolic disinfectant of both the emulsifying and soluble types.

Detail Requirements

3. The disinfectant shall be made from phenols of coal tar or petroleum origin, plus synthetic phenols of the class comprising alkyl, aryl or aralkyl phenols or their chlorinated or brominated derivatives, and a dissolving agent.

4. The proportion of the synthetic phenol shall be not more than 25 per cent by weight of the total phenolic content.

5. The disinfectant shall not contain kerosene or any petroleum distillates other than phenols of petroleum origin.

6. The phenol coefficient shall be determined by the Food and Drug Administration method, using *B. typhosus* as test organism, and shall be clearly stated on the label attached to each shipping container.

7. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

8. The disinfectant shall make stable emulsions or solutions with water of zero hardness at 20° C. (68° F.); they shall show not more than a trace of float or sediment when stored for 5 hours at room temperature.

Certification and Labeling

9. The following form of statement on labels*, invoices, etc., is recommended:

The Company certifies this fortified phenolic disinfectant to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Disinfectant Specification "D," by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

SIMPLIFIED PRACTICE RECOMMENDATION FOR SIZES OF GLASS CONTAINERS AND PACKAGES FOR HOUSEHOLD INSECTICIDES

(Liquid Spray Type)

Table 1.—Retail Packages

Package Size	Exhibition No. in Limitation Order L-103	Overflow Capacity	Maximum Weight of Glass	Height	Maximum Outside Diam. of Body	G.C.A. 400 Finish	Packages per Shipping Case
1 pt.	80-50	16-31/32	11	6-41/64 overall	2-63/64	28	24
1 qt.	180-75	33-53/64	17½	8-1/8 overall	3-47/64	28	12
1 gal. {bottle jug}	180-76	33-59/64	17¾	8-1/8 overall	3-47/64	33	4
	80-96	135%	60	12-9/16 overall	5-63/64	38	
	51.98	136	48	9-3/8 bottom to neck bead	6-41/64	38	

NOTES:

1. Finishes are interchangeable in accordance with provisions of the order.

2. When lower glass weights are used, adjustment to make correct capacity shall be made in the "B" dimension.

3. Profiles similar to those illustrated for Exhibit Series 80-00 for Boston Round Bottles and Series 51-00 for Glass Jugs as shown in WPB Limitation Order L-103 shall be maintained consistent with "C" and "D" dimensions.

4. Containers shall be round.

5. Bottom stippling optional.



CERTIFIED PRODUCTS

All Baird's Certified Products listed below
are available for private label

COAL-TAR EMULSIFIABLE DISINFECTANTS		
SYNTHETIC PHENOL GERMICIDE		
SYNTHETIC PINE DISINFECTANTS		
PINE OIL DISINFECTANTS	PINE TYPE DISINFECTANTS	
NEW ODORLESS NO-ROMA		
MINT-O-PHENE	CRESOL COMPOUNDS	
BLUE LABEL BAC-TROL	RED LABEL BAC-TROL	
PYRETHRUM TYPE PES-TOX	CATTLE-TOX AQUADEE No. 25	
SYNTHETIC TYPE PES-TOX	PYRETHRUM CONCENTRATE No. 6	
PES-TOX	VAPORIZING INSECTICIDE B-M SPECIAL CLEANER	
BAIRD'S FLOOR TREATMENT		
WET-SOL	WEED KILLERS	MOTOR WASH
ENGINE CLEANER	ENGINE DIP	CREOSOTE OIL
CLOSET CHEMICAL		RED MITE DESTROYER
PRESERVOL	CRESYLIC ACID	TIC-TOX
HAND CLEANER	MOTH SPRAY	INSECT REPELLENT
FLAME RETARDANT		CRUDE CARBOLIC ACIDS
	ODORLESS CUTTING OIL DISINFECTANT	
SHINGLE STAIN OILS		COLLOIDAL DISINFECTANTS
LARVAECIDES — FRESH AND SALT WATER		
ANIMAL DIPS	WOOD PRESERVING OILS	DEGREASERS



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Peet-Grady Method

Official Method of the National Assn. Insecticide & Disinfectant Mfrs. for Evaluating Liquid Household Insecticides.

I. INTRODUCTION

THE Peet-Grady Method was adopted as an official test in 1932, and has since been improved in certain details, all improvements have been officially accepted after satisfactory trials. This method of test is a means of determining the relative efficiency of contact insecticides dissolved in fly spray base oils. As a biological test it is subject to variations which accompany the reaction of living organisms and should be employed under the supervision of a person familiar with the biological testing of insecticides. In order to measure with reasonable tolerance the relative position of different insecticides, the test is designed to be used in conjunction with the "Official Test Insecticide" as the basis of comparison.

Two methods, or procedures, are permitted. The Small Group method is substantially the same as outlined at the time the test was adopted in 1932 while the Large Group method was officially adopted in 1938. Both methods are being used extensively, and if correctly employed, evaluation by either test may be expected to be in reasonable agreement.

II. APPARATUS

A. Reference Insecticide

The reference insecticide shall be the current Official Test Insecticide (OTI) prepared by the National Association of Insecticide and Disinfectant Manufacturers, Inc. each year. The OTI must not be diluted or changed in any manner.

B. Atomizer

The Special Atomizer No. 5004, constructed by the DeVilbiss Company, Toledo, Ohio, for the N.A.I.D.M. Standardization Com-

mittee must be used. This atomizer shall be operated with air free of oil, dust particles, or condensed moisture, and maintained at a constant pressure of 12.5 ± 0.5 per sq. in. measured by a gage of not more than 30 pounds capacity or a manometer. The atomizer shall deliver 12 cc. of OTI in 24 seconds (tolerance ± 1 second) and this should be checked frequently. Atomizers failing to meet this test should be repaired by the manufacturer or replaced.

C. Test Insect

The test insect shall be the house fly (*Musca domestica*, L.) reared from a strain mixed under the supervision of the N.A.I.D.M. once each year. Healthy test groups having an average age of 4 days are to be used. Individual flies in the test groups shall be not less than 3 nor more than 6 days old at the time of testing. The strain shall be of such susceptibility that the OTI will cause a mortality of from 30 to 55 per cent.

D. Fly Cages

Cages of any convenient type may be used if they provide at least 1 cubic inch of space per fly and at least 2 sides and the top are screened. It is suggested that the base be square in shape to provide maximum floor space. The floor of the cage is preferably detachable, to facilitate cleaning and inserting a paper floor covering. The cages are constructed of wood or other suitable material and 16 mesh wire screening, and are fitted with a sleeve opening, rubber membrane, or a door.

E. Rearing Room

This room may be of any convenient size constructed so as to be free from strong drafts, and main-

tained at a temperature of 82 ± 2 degrees Fahrenheit and relative humidity of 50 ± 5 per cent. It should be separate from the testing room in order to eliminate the possibility of traces of insecticide coming in contact with the test insects. Ventilation should be provided to reduce odors and gases from fermenting media.

F. Testing Room

This room may be of any convenient size capable of holding the standard Peet-Grady Chamber and permitting adequate additional space for the operator to handle the test efficiently. While conducting tests, this room shall be maintained at a temperature of 75 to 85 degrees Fahrenheit. It is suggested that relative humidity be held between 40 and 70 per cent. Since the exhaust fan of the chamber will move relatively large quantities of air, the temperature of the air entering this room should be approximately that specified above.

G. Peet-Grady Test Chamber

The Test Chamber shall be rigidly constructed of wood, metal, or other suitable material. The inner surface shall be smooth, impervious to the usual household type of insecticide, and as free from cracks, projections, ledges, etc., as possible. The chamber shall be a 6-ft. cube by internal measurements, with a tolerance of plus or minus 1 in. for any dimension. One wall shall contain a tight-fitting door large enough for a man to enter conveniently, with the interior side flush with the wall when closed. One or more of the walls, or the ceiling, shall contain an observation window, preferably on two opposite walls. Illumination is provided by means of a glass window in the ceiling above which is

placed an electric light of such intensity as to permit flies to be observed easily. An opening covered with 10-mesh wire screen shall be connected to an exhaust fan duct and the size and the location of this opening in relation to ventilation openings in the wall must be such that thorough ventilation of the chamber is obtained. Preferably, the exhaust opening should be 1 sq. ft. or larger and located in or near the ceiling. Air inlet openings may be ports approximately 6 x 6 in. in size, covered with screen on the inside and provided with tight fitting hinged covers on the outside. Four ports located near the 4 lower corners, or 8 ports located near both the 4 upper and 4 lower corners are satisfactory, but the ventilation ports should not be on the same level as the exhaust port. The entrance door may be used alone or in conjunction with the ventilation ports if a screen door is provided and thorough ventilation of the chamber is obtained. If the temperature of the air used to ventilate the chamber is lower than 80° F., heaters may be used to obtain the temperature of 82 ± 2 ° F. required during the test period. Such heaters must be removed before a test is started. Openings shall be provided for the introduction of the insecticide; these must be so constructed and so located that uniform distribution of the spray is effected without undue ventilation of the chamber. These openings may be round 1 in. holes located not less than 6 in. or more than 12 in. from the ceiling and 18 in. from the nearest corner on each wall, or a single hole may be provided in the center of each wall 6 to 12 inches from ceiling.

H. Exhaust Fan

An exhaust fan moving not less than 1,000 cu. ft. of air through the chamber per min. shall be used to ventilate the chamber after each test. It shall be arranged with adequate piping to exhaust the chamber vapors outside of the building.

I. Insecticide Paper

Unsize, non-glazed absorbent paper, such as brown kraft or

gray bogus, shall be used to cover the chamber floor. Two overlapping sheets of 36-40 in. width or one sheet of 6 ft. width may be employed. No special weight is specified although 60-80 lb. gray bogus paper has been found excellent.

J. Apparatus for Picking Up Flies

Any convenient means of picking up the paralyzed flies without injuring or appreciably disturbing them may be used. If a vacuum device is used, it must produce gentle suction, have a sufficiently large receptacle to prevent crowding of the flies, and it shall be cleaned after each test with the same materials used in cleaning the chamber.

III. PROCEDURE

A. Rearing and Handling Flies

In this procedure, eggs are transferred to media suitable for the development of larvae, the pupae are collected from the media and placed inside of cages, and the adult flies emerge and remain in these cages until the day of testing.

Larval media: The preferred containers are cylindrical glass battery jars approximately 6 in. in diameter and 9 in. high. For one jar, mix 340 gm. (12 oz.) standard dry larval media, (1) with approximately 750 cc. of an aqueous suspension containing 15 gm. moist cake yeast and 10 cc. non-diastatic Diamalt, (2). Mix thoroughly until a loose, fluffy media is obtained, transfer it to the battery jar without packing, cover with cloth and set in the insectary. The amount of suspension required for best rearing results will need be determined in each laboratory and it may be varied in order to prevent mold growth. It is suggested the media be prepared in the late afternoon of the day before egg collection.

- (1) Mixed quarterly according to NAIDM specifications by the Ralston Purina Co., St. Louis, Mo., on the basis of orders received by the first of January, April, July and October, in 50 lb. bags. Terms—pay on receipt of invoice.

- (2) Standard Brands Inc. products. These can be obtained from local distributors in most cases.

Eggs: Eggs are collected for a period not longer than 16 hours from food dishes or other oviposition media in cages containing mature flies not more than 8 days old. It is suggested that fresh oviposition media be placed in fly cages in the late afternoon and eggs be collected early on the following morning. After collecting the eggs they must be measured and seeded without delay. Wash the eggs in tap water at room temperature and measure 2000 eggs as accurately as possible. This may be done by allowing the eggs to settle in a calibrated pipette or graduate (0.1 cc. settled eggs contains about 700) or the eggs can be filtered and measured in calibrated pits or cells. Use 10 cc. tap water to measure and to scatter the eggs in a $\frac{1}{2}$ in. pit located in the center of the jar of larval media. Cover the eggs with loose media, replace the cloth covers on the jars, and set jars in the insectary so that at least 1.5 in. separates each jar to permit free air circulation. The maximum temperature in the jar (about 3 days later) must not exceed 130° F. Under normal conditions, more than 85 per cent of the eggs should hatch within 36 hours of the time they are laid.

Pupae: Mature larvae migrate to the top portion of the media and normally all larvae will have pupated by the seventh day after seeding eggs. When this occurs, the portion of media containing pupae is loosened, poured into a shallow tray, and air dried at room temperature. An electric fan may be used to hasten drying. Pupae are separated from the dry media by sprinkling the pupae-media mixture on an inclined tray or chute set in front of an air blast such as that from an electric fan. The pupae must be handled gently and as little as possible in order to avoid injury. Under normal conditions, at least 95 per cent of flies will emerge from the pupae.

The separated pupae are thoroughly mixed and weighed in

groups as test units and each group is placed in a shallow dish which is, in turn, placed in a cage which provides at least 1 cu. in. of space per pupae. If the large group procedure is used the test unit consists of approximately 500 pupae. If the small group procedure is used, more than 500 pupae are placed in stock cages and adult flies are sampled prior to testing.

Adult Flies: Each cage is supplied daily with a dish containing at least 15 cc. of a 50 per cent dilution of milk with water for each 100 flies and so prepared as to prevent the flies from drowning. A 40 per cent formalin solution at the rate of 1/1500 delays souring of milk for several hours. Satisfactory food must be available to the flies at all times. The series of test units is kept until the second day of oviposition (usually the 14th day after the culture was prepared) when they are ready for testing. Under normal rearing conditions, at least 80 adult flies should be obtained from each 100 eggs seeded.

B. Testing Flies

Before a fly spray test is started, the Peet-Grady chamber must be clean and have clean paper on the floor, all ports and openings must be closed, the temperature must be $82 \pm 2^\circ$ F., and all windows must be equally shaded. In both procedures, only flies which are capable of flying may be liberated into the Peet-Grady chamber. In the large group procedure all flies in one cage are used in a single test, but in the small group method a sample of 100 ± 5 flies is used in each test. Samples may be taken by liberating the flies directly into the chamber and continuing until about 10 per cent of flies remain in the stock cage. These are discarded. Samples may be taken also by discarding the first 100 flies and then counting 50 flies into each of a series of small cages. One hundred flies are counted into the last cage and then, starting with the next to last cage and working backwards, 50 flies are added to each. Flies remaining in the stock

cage are discarded. The order of spray treatments must be randomized as discussed in section IV, paragraph 6.

After liberating the flies in the chamber, a total of 12 cc. of insecticide shall be applied within one minute, at 12.5 lb. pressure, and in equal quantities through each spray hole. The nozzle of the atomizer shall be oscillated slowly in a horizontal plane to avoid spraying walls and ceilings and to effect uniform distribution of the spray. The chamber is kept closed at a constant temperature in the range of $82 \pm 2^\circ$ F. for 10 min. from the time the spraying is started. At the end of 10 min. the ports are opened and the chamber is ventilated by means of the exhaust fan while the flies are collected.

The paralyzed flies are picked up and transferred immediately to clean cages meeting the specifications of section II, paragraph D. These flies may be counted when they are picked up or later, depending upon which time is most convenient. During the subsequent 24-hr. recovery period, the cage is placed in the rearing room and supplied with an adequate quantity of a 5 per cent sugar solution, arranged so that the top of the dish is not more than $\frac{3}{4}$ inch above the floor of the cage and flies cannot drown in it. A gauze-wrapped ball of cotton saturated with 5 per cent sugar solution is also satisfactory.

The unparalyzed flies in the chamber at the end of the 10-min. exposure period must be counted and discarded.

After a test is completed, all toxic residues must be removed from the chamber. The paper on the floor must be renewed and the inside walls and ceiling must be cleaned thoroughly. Wiping with a clean cloth saturated with alcohol containing 10 per cent acetone or washing with soap and water will remove a number of toxic residues. However, special cleaning precautions may be required after a test with a new chemical compound in order to remove its toxic residue.

C. Assembling the Data

The number of unparalyzed flies must be counted and recorded at the end of the 10-min. exposure period. The dead flies are counted 24 hrs. (± 1 hr.) later, preferably by removing them from the recovery cage. Only flies that show no sign of life upon being touched may be counted as dead. If paralyzed flies were counted as they were collected, the sum of paralyzed and unparalyzed flies yields the total flies in the test. If paralyzed flies were not counted as collected, the recovered flies are killed by placing the cage in an oven at 170° F. for a few minutes, after which they are counted. The sum of recovered and dead flies yields the paralyzed flies and this sum added to the unparalyzed flies yields the total flies used in the test. The mortality is the per cent dead of total flies and the knockdown is the per cent paralyzed of total flies.

IV. CONDITIONS FOR OFFICIAL EVALUATION

1. The tests shall be conducted in accordance with the procedure previously described.
2. At least 2 cultures of flies shall be used in making an official evaluation.
3. Cages showing a combined mortality and crippling greater than 8 per cent on the day of test shall not be used.
4. An unknown insecticide to be officially rated shall have a knockdown percentage equal to that of the OTI with a tolerance of minus 2.
5. The kill by the OTI shall fall between 30 and 55 per cent in all tests. The toxicity of an unknown spray shall be reported by a grade letter, obtained by subtracting the average kill by the OTI from the average kill by the unknown spray and comparing this result with the following figures:

Grade Letter	Kill Difference
AA	+16 or greater
A	+6 to +15
B	+5 to -5

6. In the small group procedure no more than 2 unknown

samples may be tested in conjunction with one OTI in any one series. Ten tests are run on the OTI and on each of the unknowns in parallel; that is, test each spray the same number of times on flies of the same culture and test all sprays the same number of times on any one day. The samples of a series must be randomized in the order of testing. For example, number the samples and the OTI, and test them in the order 1, 2, 3; 2, 1, 3; 3, 2, 1, etc., until each has

been tested ten times. After the mortality data are obtained, calculate the average kills and determine the difference between that of the unknowns and that of the OTI. In order for these differences to be valid, the standard error of the mean difference between the average OTI kill and the average unknown kill must be less than 3. If it is 3 or greater, the test results were too variable and to make the results valid, additional paired tests must be

run to reduce the figure to a value less than 3. The following example illustrates the arrangement of test data and calculations described in the preceding paragraphs. When two unknown samples and the OTI are tested in series, the first table should consist of differences between Sample No. 1 and the OTI, the second table should show differences between Sample 2 and the O.T.I.

6. Small Group Method

Pair	Culture	Date	% Dead		Difference ^a	Deviation ^b	Deviation ^b Squared
			Sample 1	OTI			
1	C	3-8	58	50	+8	+4	16
2	C	8	62	55	+7	+3	9
3	C	8	60	54	+6	+2	4
4	C	8	52	52	+0	-4	16
5	C	8	49	46	+3	-1	1
6	E	9	61	54	+7	+3	9
7	E	9	46	49	-3	-7	49
8	E	9	53	51	+2	-2	4
9	E	9	57	54	+3	-1	1
10	E	9	53	46	+7	+3	9
			55. 1M	51. 1M	+4 MD	0	118 Sum d ^b

^a Sample 1 kill minus OTI kill.

^b Deviation from the mean difference (MD).

The mean difference (MD) between Sample 1 kill and the OTI kill is 4.0

$$\text{The standard error of MD} = \sqrt{\frac{\sum d^2}{n-1}} = \sqrt{\frac{118}{9}} = 1.14$$

7. Large Group Method

Cage No.	CULTURE E Nov. 21		CULTURE F Nov. 23	
	Sample	% Dead	Sample	% Dead
1	OTI	43	2	69
2	1	44	3	65
3	3	57	OTI	54
4	2	63	3	58
5	3	52	1	45
6	OTI	47	2	77
7	1	39	1	54
8	2	71	OTI	46
Sample	Mortalities	Average	Rating	Grade
OTI	43, 47, 54, 46	47.5		
1	44, 39, 45, 54	45.5	- 2.0	B
2	63, 71, 69, 77	70.0	+22.5	AA
3	57, 52, 65, 58	58.0	+10.5	A

1.14 is less than 3, thus indicating the test has been properly conducted. The letter n (in formula above) denotes the number of paired tests. This number is always 10 except when it is necessary to run additional tests to reduce the standard error of the mean difference to 3 or less.

The percentage kill of Sample 1 minus the percentage kill of OTI is +4, therefore, Sample 1 is a "B" grade insecticide.

7. In the Large Group procedure the evaluation is carried out as follows:

The evaluation is based on the difference in mortality of the OTI and the unknown as determined by a minimum of 4 tests. The order of testing shall be random and replicated OTI tests on any culture shall agree within 10 points. The accompanying example illustrates one arrangement of testing, the computation of the test results, and the grading of the sprays.

Federal Specifications

General and detailed requirements as specified in the Standard Stock Catalogue of the U.S. Federal Specifications Board.

Powered High-Titer Built Soap (Proposed as Federal Specification P-S-536)

The soap covered by this specification shall be of one type as hereinafter specified: *Composition*.—The composition of the soap shall be as shown in Table I. *Form*.—The soap shall be a homogeneous, uniform mixture of soap and alkalies in powdered form. It shall be readily soluble. *Color*.—The soap shall have a light uniform color. *Odor*.—The odor shall not be objectionable in the soap as received, or in a hot water solution. The soap shall not leave an objectionable odor on the objects after using with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of the sample approved by the bureau concerned. The approved sample shall be kept in an airtight container for comparison with the sample submitted for inspection.

Chip Soap (P-S-566a)

Chip soap shall be a soap in chip form made from soda and fats or fatty acids, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for

Table I.—Composition

	Per Cent	Maximum	Minimum
Moisture and matter volatile at 105° C.	11		
Free alkali, calculated as sodium hydroxide, NaOH	0.2	22 per cent	
Alkaline salts, calculated as sodium carbonate, Na ₂ CO ₃	1.0		
Matter insoluble in water	0.5	56 per cent	39° C.
Chloride (calculated as sodium chloride)			
Anhydrous soap	1.5		
Titer of the mixed fatty acid prepared from the soap	18.0		
Residue retained on a No. 12 sieve	None		
Passing through a No. 140 sieve	1.0		
Rosin	None		
Unsaponifiable matter			
Starch			

laundering and other washing, cleaning and scouring processes with soft water, when the presence of alkaline salts is not desirable.

Moisture and matter volatile at 105° C. shall not exceed 10 per

cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 4 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Matter in-

ONLY the essential requirements of these government specifications have been extracted in our summary. Copies of the complete specifications, including details as to packaging, methods of analysis, etc., are available through the U. S. Federal Specifications Board. The specifications listed are the latest versions as of the date of compilation of this edition of the Blue Book. Readers are cautioned, however, that further changes are being made periodically, and that the latest amended versions of all specifications should be consulted in filling government orders.

soluble in water shall not exceed 1.0 per cent. Anhydrous soap shall be not less than 85 per cent. Titer of the mixed fatty acids prepared from the soap must be not less than 39° C. No rosin shall be present.

Cake Grit Soap (P-S-571a)

Cake grit soap shall be of the following types as specified: Type A—for fine work, such as glass and enamel; Type B—for scouring and scrubbing.

Type A—

Moisture and matter volatile at $105^{\circ} \pm 2^{\circ}$ C. shall not exceed 4 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 88 per cent nor more than 93 per cent. The insoluble siliceous material shall consist of not less than 90 per cent of ground feldspar. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. Sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at $105^{\circ} \pm 2^{\circ}$ C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall not scratch glass or enameled surfaces. The material shall be unscented and shall be of a light gray or white color.

Type B—

Moisture and matter volatile at $105^{\circ} \pm 2^{\circ}$ C. shall not exceed 5 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH).

Detail Requirements for Laundry Chip Soap

	Maximum Per Cent	Minimum Per Cent
Moisture and matter volatile at 105° C.....	15.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride.....	12.0	....
Free alkali, calculated as sodium hydroxide (NaOH).....	.5	....
Free acid, calculated as oleic acid.....	.5	....
Matter insoluble in water.....	1.0	....
Chloride, calculated as sodium chloride (NaCl).....	1.0	....
Rosin	20.0	....
Anhydrous soap	72.0	....

shall not exceed 0.1 per cent. Insoluble siliceous material shall not be less than 75 nor more than 85 per cent. The insoluble siliceous material shall be mainly quartz, and it all must pass through a No. 100 sieve. Sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at $105^{\circ} \pm 2^{\circ}$ C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall be unscented and shall be of a light gray or white color.

Hand Grit Soap (P-S-576a)

Hand-grit soap shall be a cake soap containing clean, finely divided insoluble siliceous matter, as free as possible from water, uncolored, mildly perfumed unless otherwise specified, and well compressed in firm, smooth cakes.

Matter volatile at 105° C. shall not exceed 25 per cent. Total alkalinity of matter insoluble in alco-

hol (alkaline salts), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 25 nor more than 35 per cent. The insoluble siliceous material shall not yield more than 2 per cent of residue retained on a No. 100 sieve and not more than 10 per cent of residue retained on a No. 200 sieve. Sugar, and foreign matter shall not be present. Rosin shall not exceed 5 per cent. Anhydrous soap shall be not less than 35 per cent. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated to the basis of material containing 25 per cent of matter volatile at 105° C. Unless otherwise specified, each cake shall weigh not less than 8 ounces nor more than 16 ounces.

Laundry Chip Soap (Rosin Type) (P-S-581)

Laundry chip soap shall be a well-made, uniformly mixed soap in chip form, made from soda and fats or fatty acids, with no excessive

Detail Requirements for Granulated Laundry Soap

	Maximum Per Cent	Minimum Per Cent
Moisture and matter volatile at 105° C.....	10.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride.....	14.0	....
Free alkali, calculated as sodium hydroxide (NaOH).....	.5	....
Free acid, calculated as oleic acid.....	.5	....
Matter insoluble in water.....	1.0	....
Chloride, calculated as sodium chloride (NaCl).....	1.0	....
Rosin	20.0	....
Anhydrous soap	75.0	....
Residue retained on a No. 12 sieve.....	2.0	....

proportion of rosin and a moderate amount of matter insoluble in alcohol, shall be of a uniform color, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller.

The material shall conform to the detail requirements listed in the table on facing page.

Granulated Laundry Soap (Rosin Type) (P-S-583)

Laundry granulated soap shall be a well-made, uniformly mixed soap in granulated or powdered form, made from soda and fats or fatty acids, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol, shall be of a uniform color, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. Detail requirements listed in table on facing page.

Ordinary Bar Laundry Soap (P-S-591a)

Ordinary laundry bar soap shall be a well-made, uniformly mixed laundry or common soap, made from soda and fats or fatty acids, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol, and shall be suitable for use with moderately

hard water for general cleaning and laundry purposes.

Odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The materials shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an air-tight, closed container for comparison with samples from deliveries.

Moisture and matter volatile at 105° C. shall not exceed 36 per cent. The sum of free alkali or free acid, total matter insoluble in alcohol and sodium chloride, shall be not less than 2 per cent nor more than 11.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Free acid, calculated as oleic acid, shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 1 per cent. Chloride calculated as sodium chloride (NaCl), shall not exceed 1.0 per cent. Rosin shall not exceed 25 per cent. Anhydrous soap shall be not less than 52 per cent. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of an assumed moisture and volatile matter content of 36 per cent.

Powdered Laundry Soap (P-S-596a)

Powdered soap shall be a soap in powdered form made from soda and fats or fatty acids, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for laundering and other washing, cleaning and scouring processes with soft water, when the presence of alkaline salts is not desirable.

Moisture and matter volatile

at 105° C. shall not exceed 6 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 4 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Matter insoluble in water shall not exceed 1.0 per cent. Anhydrous soap shall be not less than 89 per cent. Titer of the mixed fatty acids prepared from the soap shall be not less than 39° C. Residue retained on a No. 12 sieve shall not exceed 1.5 per cent. Rosin, none. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 6 per cent of volatile matter.

Liquid and Paste Soap for Automobile, Floor and General Cleaning (P-S-598)

Soap covered by this specification shall be of two types. Type I—Liquid. Type II—Paste. Type I shall be a uniform liquid soap made solely from whole neutral vegetable oils and potash. Type II shall be a uniform gel or paste soap made solely from whole neutral vegetable oils and potash.

Type I shall be soluble in soft water and when diluted with water shall act as a cleaner. The flash point shall be above its boiling point. It shall not contain any solvents or oils that will damage floor surfaces. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water.

Type II. Paste soap.—The material shall be a uniform translucent, firm gel or paste of a yellowish-white to brownish-yellow color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing

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with a water solution of the soap and rinsing thoroughly with plain water. *Moisture (by distillation method, using toluol instead of xylol)*—shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of moisture shall be rejected without further test. The soap shall dissolve readily to give a 0.15- to 0.2 per cent solution, using distilled water at 15.5 to 20° C. (60° to 68° F.). The solution so prepared shall yield a good suds. A solution of the soap in soft water shall act as a cleaner and shall not damage surfaces on which it is used. When specified, each bidder shall submit with his proposal a 1-quart sample of the soap that he proposes to furnish, packed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries. The material of each type shall not become rancid or otherwise deteriorate when kept in a closed container.

The material shall conform to the detail requirements for the type indicated as listed in the accompanying table. Percentages are by weight.

Computation (type II only).

—The percentage of moisture shall be computed and reported by the testing laboratory on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture content of 50 per cent.

Soap; Low-Titer (P-S-600a)

Low-titer soap shall be of the following types and classes:

Type I—Bar form

Type II—Other forms

Class A—Granular

Class B—Powdered

Class C—Flake

The soap shall have a uniform color. The odor shall not be objectionable in the soap as received or in a solution of the soap in water at 125° to 130° F. The material shall not leave an objectionable odor on objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If

Detail Requirements (P-S-598)

		Type I Min.	Type I Max.	Type II Min.	Type II Max.
Moisture (toluol distillation method) (per cent) . . . . .	..	..	..	55	
Total matter insoluble in alcohol (per cent) . . . . .	..	0.5	..	1.0	
Free alkali, calculated as potassium hydroxide (KOH) (per cent) . . . . .	..	.05	..	.1	
Free acid, calculated as oleic acid (per cent) . . . . .	..	.1	..	.2	
Alkaline salts, calculated as potassium carbonate (K_2CO_3) (per cent) . . . . .	..	.1	..	.2	
Matter insoluble in distilled water (per cent) . . . . .	..	.1	..	.2	
Chloride, calculated as potassium chloride (KCl) (per cent) . . . . .	..	.3	..	.5	
Unsaponified and unsaponifiable matter (per cent) . . . . .	..	.4	..	.8	
Anhydrous soap, calculated as potash soap (per cent)	20	..	43	..	
Total sodium compounds, calculated as Na_2O (per cent) . . . . .	..	.2	..	.5	
Glycerol (per cent) . . . . .	..	1.8	..	.4	..
Iodine number (WIJS) of mixed fatty acids derived from the soap	100	150	100	150	
Acid number of mixed fatty acids derived from the soap	195	205	195	205	
Rosin . . . . .	..	None	..	None	
Sugar . . . . .	..	None	..	None	

desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. When specified, each bidder shall submit with his proposal a sample of the material that he proposes to furnish, to show color, odor, and condition.

Low-titer soap shall conform to detail requirements as listed in the table below.

Potash Linseed Oil Soap, Liquid and Paste, for Floor and General Cleaning (P-S-603)

Potash-linseed-oil soap shall be of two types. Type I—Liquid. Type II—Paste. Type I shall be a uniform liquid soap made solely from whole neutral raw linseed oil and potash. Type II shall be a uniform, translucent, firm gel or paste soap made solely from whole neutral raw linseed oil and potash.

Type I shall be soluble in soft water and when diluted with water shall act as a cleaner. The flash point shall be above its boiling point. It shall not contain any solvents or oils that will damage floor surfaces. The odor shall not be objectionable

Detail Requirements for Low Titer Soap

	Type I Max.	Type I Min.	Type II Max.	Type II Min.
Matter volatile at $105^\circ \pm 2^\circ$ C. (per cent)	35.0	..	7.0	..
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride (per cent)	2.0	..	9.0	..
Water soluble sodium silicate (calculated as in Spec P-S-530a) (per cent)	0.4	..	..	..
Free alkali, calculated as sodium hydroxide (NaOH) (per cent)	0.1	..	0.4	..
Free acid, calculated as oleic acid (per cent)	0.1	..	None	..
Matter insoluble in water (per cent) . . . . .	.5	..	1.5	..
Rosin	None	..	None	..
Sugar	None	..	None	..
Copper (parts per million)	10.0	..	1.0	..
Unsaponified saponifiable matter (per cent)	1.0	..	64.0	81.0
Anhydrous soap (per cent) . . . . .	..	..	22° C	..
Titer of the mixed fatty acids prepared from the soap 28° C . . . . .	..	..	..	..
Iodine number (Wijs) of the mixed fatty acids prepared from the soap	90.0	74.0	90.0	74.0
Acid number of the mixed fatty acids prepared from the soap	205.0	180.0	205.0	180.0
Residue retained on a No. 12 sieve (class B only) (per cent) . . . . .	..	..	1.5	..

in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water.

Type II—Paste soap shall be a uniform translucent firm gel or paste soap of a yellowish-white to greenish-brown color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water. *Moisture (by distillation method, using toluol instead of Xylol)* shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of moisture shall be rejected without further test. The soap shall dissolve readily to give a 0.15- to 0.2-per cent solution, using distilled water at 15.5° to 20° C. (60° to 68° F.). The solution so prepared shall yield a good suds. A solution of the soap in soft water shall act as a cleaner and shall not damage floor surfaces. When specified, each bidder shall submit with his proposal a 1-quart sample of the soap that he proposes to furnish, packed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries. The material of each type shall not become rancid or otherwise deteriorate when kept in a closed container.

The material shall conform to the detail requirements for the type indicated as listed in the accompanying table. Percentages are by weight.

Computation (Type II only).

—The percentage of moisture shall be computed and reported by the testing laboratory on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture content of 50 per cent.

Soap Powder (P-S-606a)

Soap powder shall be a uniform mixture of soap and sodium

Detail Requirements for Potash Linseed Soap

	<i>Type I</i>	<i>Min.</i>	<i>Max.</i>	<i>Type II</i>	<i>Min.</i>	<i>Max.</i>
Moisture (toluol distillation method) (per cent)				55		
Total matter insoluble in alcohol (per cent)		0.5	..	1.0		
Free alkali, calculated as potassium hydrate (KOH) (per cent) . . . . .		.05	..	.1		
Free acid, calculated as oleic acid (per cent) . . . . .		.1	..	.2		
Alkaline salts, calculated as potassium carbonate (K_2CO_3) (per cent) . . . . .		.1	..	.2		
Matter insoluble in distilled water (per cent) . . . . .		.1	..	.2		
Chloride, calculated as potassium chloride (KCl) (per cent) . . . . .		.3	..	.5		
Unsaponified and unsaponifiable matter (per cent) . . . . .		.4	..	1.0		
Anhydrous soap, calculated as potash soap (per cent)	20	..	43			
Total sodium compounds, calculated as Na_2O (per cent)		2	..	.5		
Glycerol (per cent)		1.8	..	4	..	
Iodine number (WISJ) of mixed fatty acids derived from the soap		175	..	175	..	
Acid number of mixed fatty acids derived from the soap	190	205	190	205	..	
Sugar		None	..	None		

carbonate, and/or other alkaline salts in powdered form. It shall be readily soluble in tepid water, shall contain no free caustic alkali or inert fillers, and shall be free from objectionable odor.

Anhydrous soap shall be not less than 15 per cent. Alkaline salts, calculated as sodium carbonate (Na_2CO_3) shall be not less than 30 per cent. The sum of anhydrous soap and alkaline salts, calculated as sodium carbonate shall be not less than 55 per cent.

detail requirements listed in the table below.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 55%.

White Floating Toilet Soap (P-S-616a)

Floating toilet soap shall be a cake soap without objectionable odor, thoroughly saponified, and so prepared as to float on water.

Moisture and matter volatile at 105° C. shall not exceed 34 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide ($NaOH$), shall not exceed 0.1 per cent. Chloride,

Detail Requirements for Salt Water Soap

	<i>Maximum</i>	<i>Minimum</i>
Moisture and matter volatile at 105°C.	per cent 55.0	..
Total matter insoluble in alcohol	per cent 3.0	2.0
Free alkali, calculated as sodium hydroxide ($NaOH$)	per cent .5	..
Chloride, calculated as sodium chloride ($NaCl$)	per cent 3.0	2.5
Anhydrous soap	per cent ..	40.0
Matter insoluble in water	per cent .5	..
Acid number of the mixed fatty acids prepared from the soap . . . . .	..	240
Sugar, and foreign matter	None	..
Rosin	None	..

calculated as sodium chloride (NaCl), shall not exceed 1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Anhydrous soap shall be not less than 62 per cent. Acid number of the mixed fatty acids prepared from the soap, shall be not less than 212. Rosin, sugar and foreign matter shall not be present. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated on an assumed moisture and volatile matter content of 34 per cent.

Liquid Toilet Soap (P-S-618a)

Liquid toilet soap shall be a clear solution of pure vegetable oil potash (or potash and soda) soap with or without glycerol or alcohol, suitably perfumed, and free from all foreign matter. It shall quickly form a satisfactory lather and have no injurious effect and leave no objectionable odor on the skin.

The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave any objectionable odor on the skin or other surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water. Unless otherwise specified each bidder shall submit with his proposal a one-quart sample, placed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries.

The material shall be a clear solution, free from objectionable odor, other than from coconut oil, and shall form a satisfactory lather. Total anhydrous soap shall be not less than the equivalent of 15 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali calculated as potassium hydroxide (KOH) shall not exceed 0.05 per cent. Chloride calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. More than traces of sulphates and sugar shall not be present. All constituents shall be calculated on the basis of the original sample.

Milled Toilet Soap (P-S-621a)

Milled toilet soap shall be a high grade, milled cake soap as free as possible from water, either colored or uncolored, and mildly perfumed unless otherwise specified, thoroughly saponified, well compressed in firm, smooth cakes of a size and shape specified in the contract. It should lather freely when used with cold, soft water.

Moisture and matter volatile at 105°C . shall not exceed 15 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 1.7 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.4 per cent. Unsaponified saponifiable matter shall not exceed 0.3 per cent. Anhydrous soap shall be not less than 83 per cent. Sugar and foreign matter shall not be present. Rosin, none. The percentage of moisture and matter volatile will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 15 per cent of volatile matter.

Powdered Toilet Soap (for Dispensers) (P-S-626a)

Powdered toilet soap for use in dispensers shall be a thoroughly saponified soap in powdered form, made from soda and fats; shall be uncolored and mildly perfumed, unless otherwise specified; shall be a uniform, free-flowing, noncaking powder; and shall lather freely when used with cold soft water.

The material shall be a uniform powder and shall be freeflowing and noncaking when used in a dispenser conforming to type III or IV of Federal Specification FF-D-396. It shall lather freely when used with soft water at room temperatures. Shall be mildly perfumed, unless otherwise specified. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept

in an airtight, closed container for comparison with samples from deliveries.

Shall be uncolored, unless otherwise specified. Matter volatile at $105^{\circ}\pm 2^{\circ}\text{C}$. shall not exceed 6 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Anhydrous soda soap shall be not less than 91 per cent. Rosin, sugar, and foreign matter shall not be present. The material shall meet the following fineness requirements:

	Minimum Per Cent	Maximum Per Cent
No. 12 sieve.....	—	1.5
No. 45 sieve.....	50	—
No. 100 sieve.....	90	—

Toilet Soap-Borax Compound (for Dispensers) (P-S-628)

Soap and borax compound for use in dispensers shall be a uniform mixture of a thoroughly saponified soap and borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10 \text{H}_2\text{O}$); shall be free from added coloring matter and mildly perfumed, unless otherwise specified; shall be a uniform free-flowing, noncaking powder, when used in a dispenser conforming to Type III or IV of Fed. Spec. FF-D-396. It shall lather freely when used with soft water at room temperature. Anhydrous soda soap shall be not less than 23 per cent and not more than 27 per cent. Borax, calculated as $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10 \text{H}_2\text{O}$, shall be not less than 72 per cent and not more than 77 per cent. The pH of a 1 per cent solution by weight of the material in distilled water shall be not less than 9.0 and not more than 10.2 at 25°C , using a glass electrode. Matter insoluble in water shall not exceed 0.2 per cent. Sugar, and foreign matter shall not be present. Rosin none. The material shall meet the following fineness requirements:

	Minimum Per Cent	Maximum Per Cent
No. 12 sieve.....	—	0
No. 45 sieve.....	5	—
No. 100 sieve.....	45	—

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Caustic Soda for Cleaning (P-S-631a)

Caustic soda shall be of but one grade. It shall be furnished in airtight containers (13-ounce cans or drums) in flake, ground, or lump form, as specified in the invitation for bids. It shall conform to the following detail requirements:

Sodium hydroxide (NaOH) shall be not less than 95 per cent.

Carbonate, calculated as sodium carbonate (Na_2CO_3), shall not be more than 2 per cent.

Laundry Soda (Washing Soda) (P-S-641a)

Laundry soda shall be a white uniform powder composed of sodium carbonate and sodium bicarbonate. It shall conform to the following detail requirements:

	<i>Maximum Per Cent</i>	<i>Minimum Per Cent</i>
Total alkalinity, calculated as Na_2O	43	39
Sodium bicarbonate (NaHCO_3)	50	35
Sodium carbonate (Na_2CO_3)	50	35
Matter insoluble in water .....	.1	—

Cleaner Containing Synthetic Detergent for Painted Surfaces (P-C-431)

Cleaner for painted surfaces shall be on one grade and of the following types:

- Type I.—Powder
- Type II.—Flake
- Type III.—Liquid
- Type IV.—Paste

The cleaner shall be a uniform, homogeneous product, free from any objectionable odor, and consisting essentially of synthetic organic detergents. It shall contain no abrasives or fatty acid soaps and shall not be irritating to the skin.

General requirements.—Each bidder shall submit a sample of the cleaner he will deliver for inspection and testing. The cleaner shall be satisfactory for use in cleaning operations with soft, hard or sea water. The manufacturer shall supply with each package a complete set of clear,

concise instructions for the use of the cleaner. The cleaner shall be stable and not lose effectiveness or otherwise deteriorate when stored in closed containers at normal temperatures. pH value of 1.0 per cent distilled water solution (by weight) of the cleaner shall be not less than 5.5 nor more than 10.0. The cleaner shall be free-rinsing. A 0.2 per cent (by weight) solution of the cleaner shall not cause greater than one-half loss in specular gloss of painted surfaces caused by a 0.2 per cent solution of trisodium phosphate. A solution of 50 grams of cleaner per liter, in distilled or sea water, shall exhibit a cleaning efficiency of not less than 80 per cent.

Cleaning Compound (P-C-565) Soap—Abrasives Type for painted surfaces

The product is to be without objectionable odor, and not harmful to the hands. The seller must label each container with directions for use. The product must be capable of being applied either with a damp cloth or sponge. It is to be a uniform soft paste, meeting the following requirements.

Matter volatile at 105°C . shall not exceed 65% by weight. It shall contain not more than 0.1% by weight of free alkali calculated as NaOH . It shall contain not more than 0.5% by weight free acid calculated as oleic acid. Alkaline salts calculated as Na_2CO_3 shall not exceed 5% by weight. Insoluble siliceous matter shall not be less than 25% nor more than 50% by weight. All of the insoluble siliceous matter shall pass through a No. 80 sieve; and not more than 15% shall be retained on a No. 200 sieve. Anhydrous soap shall be not less than 3.5% by weight.

A special test is provided for determination of abrasive properties. A thin film of the compound is spread over a clear microscopic slide. Another slide is placed over the film and the two slides pressed together, using a slight pressure, and

rubbing one slide over the other with a rotary motion. The slides when wiped clean of the compound shall not be scratched.

Grease-Cleaning Compound Solvent-Emulsion Type (P-C-576)

Grease-cleaning compound shall be furnished in two types, Type I, non-phenolic, and Type II, phenolic. The compound shall be uniform liquid and shall be suitable for the purpose intended.

Type I, nonphenolic

Flash point shall be not less than 200°F . (open cup). The compound shall have a neutralization number of not more than 8 (mg. of KOH to neutralize 1 gm. of compound). The compound shall have no free alkali. The pour point shall be not more than 35°F . The loss in weight shall be not more than 10 per cent after a 24-hour period. Shall be free from phenols. Physical and performance tests covering stability of emulsion, solubility in kerosene and in water, etc., are also provided.

Type II, phenolic

As above except that the material is to contain not less than 15 per cent and not more than 25 per cent phenols by volume, and must pass a phenol ($\text{C}_6\text{H}_5\text{OH}$) limitation test.

Mechanics' Paste, Powder And Hand Detergents (P-D-221a)

Detergents for mechanics' use shall be of three types: Type I — hand grit paste detergent; Type II — hand scouring powder with mineral abrasive and Type III — hand scouring powder with vegetable abrasive. Type I shall be a uniform mixture of detergents and mineral abrasives in paste form. Type II shall be a uniform mixture of detergents and mineral abrasives in powder form. Type III shall be a uniform mixture in powder form of clean sawdust or cornmeal, thoroughly saponified soap and/or act-

ive salt-free synthetic detergents, and pine oil. The detergent shall not contain any mineral abrasives such as lava, pumice, sand, quartz, etc. Sawdust, if used, shall be of a granular nature and free from splinters.

Detergents for mechanics' use shall be satisfactory for removing oil, grease, paint, printing inks and other occupational soil from the hands without harmful effect on the skin. They shall lather freely when used with fresh water at room temperature. Detergents in powder form shall be free-flowing and non-caking when used in dispensers conforming to the requirements of Federal Specification FF-D-396 for types III and IV.

The odor shall not be objectionable. If desired, it shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries.

For Type I detergent, the percentage of matter volatile at $105^{\circ} \pm 2^{\circ}$ C. will be computed on the basis of the grit paste detergent as received, but with all other constituents will be calculated on the basis of material containing 50.0 per cent of matter volatile at $105^{\circ} \pm 2^{\circ}$ C. Types II and III shall have all constituents reported on the basis of the sample as received.

Special Detergents (P-D-236)

Detergents for manual cleaning of aluminumware shall be of the following classes:

Class A. Non - abrasive cleaner.

Class B. Abrasive cleaner.

The material used in Class A non-abrasive cleaner shall be suitable for any type of manual washing where abrasiveness is not desired, and shall be substantially uniform in appearance throughout. It shall be free from objectionable odor, and shall dissolve readily in tepid water. Cleaner may be supplied in either powder, granule or chip form pro-

	Type I		Type II		Type III	
	Min.	Max.	Min.	Max.	Min.	Max.
Matter volatile at $105^{\circ} \pm 2^{\circ}$ C.....	55.0	....	5.0	....	10.0	
Alkaline salts (calculated as sodium carbonate)	3.0	2.0	5.0	....	0.2	
Free alkali (calculated as sodium hydroxide)	0.1	....	0.1	....	0.1	
Free acid (calculated as oleic acid) ...	0.5	....	0.5	....	0.5	
Anhydrous soda soap and/or active salt-free synthetic detergents.....	8.0	....	17.0	....	35.0	....
Matter insoluble in water (siliceous matter)	25.0	50.0	60.0	76.0	....	none
Fineness of insoluble siliceous matter;						
Percent retained on:						
No. 40 sieve .....	....	none	....	none	....	....
No. 60 sieve	10.0	20.0	....	5.0	....	....
No. 80 sieve	30.0	45.0	....	....	....	....
No. 100 sieve	35.0	55.0	....	30.0	....	....
No. 200 sieve	60.0	....	....	60.0	....	....
Matter insoluble in water (sawdust or cornmeal) .....	....	....	....	40.0	....	62.0
Fineness of finished detergent;						
Percent retained on:						
No. 20 sieve .....	....	....	....	....	....	none
No. 45 sieve .....	....	....	....	50.0	....
No. 100 sieve .....	....	....	....	90.0	....
Rosin .....	....	....	5.0	....	....	5.0
Sugar	none	....	none	....	....	none
Volatile hydrocarbons (pine oil).....	....	....	....	3.0	....	5.0

vided it conforms to the detailed requirements.

The material used in Class B abrasive cleaner shall be suitable for any uses requiring a manual cleaner where soil adheres too tenaciously for non-abrasive cleaners. It may be supplied in the form of a solid, a paste, or a combination of any two of the above. Combinations of metal wools and soaps may be supplied. The cleaner shall be free from objectionable odor and from poisonous or irritant chemicals.

Each bidder shall submit with his proposal a sample of the material that he proposes to furnish. Each sample shall be labeled to show the amount recommended for softening 10 gallons of water containing 10 grains (171 p.p.m.) of hardness, calculated as CaCO_3 , and may be used by the inspector or purchasing officer in the recommended proportions for determining the performance or cleaning ability of the material.

Samples from deliveries shall be subjected to similar tests. If

specified by the purchasing officer, the material, when used in the proportions recommended by the bidder, shall be at least equal in cleaning ability to a standard sample furnished, or indicated, by the purchasing officer.

Class A. Non - Abrasive Cleaner shall conform to the following detail requirements:

Turbidity—The turbidity of the cleaner solution shall conform to the test described in paragraph F-2b (2). (See complete Specification.)

Corrosion—When tested by the method described in paragraph F-2f (2), the cleaner solution shall be without visible action on bare or anodic oxide-coated aluminum alloy.

Water Softening Capacity — A suds which is stable for not less than 5 minutes shall be formed when the material is tested as described in paragraph F-2e.

Hydrogen Ion Content—The pH of a 1 per cent solution by weight of the cleaner in distilled water shall not exceed 10.5 when measured as indicated in paragraph F-2h.

Cleaning Ability—The material shall

clean satisfactorily when tested as indicated in paragraph F-2a. *Relative Cost*—The relative cost of the cleaner shall be determined from the product of the delivered price per pound of the cleaner and the number of pounds of the cleaner required to treat 1000 gallons of water containing 10 grains (171 p.p.m.) per gallon of hardness, calculated as CaCO_3 . The amount of cleaner used in this computation shall be that required to give the concentration used in paragraphs F-2b (2) and F-2e of this specification.

Class B. Abrasive Cleaner shall conform to the following detail requirements: *Abrasion*—When tested by the method described in paragraph F-2i (See complete Specification) the cleaner shall produce no undesirable scratching. *Corrosion*—When tested by the method described in paragraph F-2f (3), the cleaner shall be without visible action on bare or anodic oxide-coated aluminum alloy. *Rinsability*—When tested by the method described in paragraph F-2j, the cleaner shall be removed completely from a glass plate. *Cleaning Ability*—The material shall clean satisfactorily when tested as indicated in paragraph F-2a.

Proposed Revisions For Mechanical Dishwashing Compound.

The following specification for mechanical dishwashing compound is now under revision and a new number will be assigned to type I, previously part of specification P-D-236.

The material used in this dishwashing compound shall be of but one grade. It shall include any free flowing form, such as powder, granular crystalline, and flake, and shall be suitable for use in spray type mechanical dishwashing machines. The material shall be thoroughly mixed and present no evidence of segregation of individual constituents, or of lumping or caking.

General Requirements: Bid sample. Unless otherwise specified in the invitation for bids, each bidder shall submit with his proposal

Composition

Constituents	Percent (by weight)	
	Minimum	Maximum
Moisture .....	..	25
Alkali (as Na_2O)	30	45
Phosphates (as P_2O_5)	20	..
Silicates (as SiO_2)	8	..
Carbonates (as CO_2) .....	..	20
Insoluble matter .....	..	1
Total of P_2O_5 , SiO_2 , and CO_2	35	..
Total of Na_2O , P_2O_5 , SiO_2 and CO_2	70	..

a 10-pound sample of the material that he proposes to furnish for the purpose of determining compliance with the requirements of this specification.

Detergent for use in mechanical dishwashing machines shall conform to the following detail requirements:

Stability — Dishwashing compound shall remain stable, free-flowing and usable under conditions varying between -15° C. (5° F.) and 37° C. (100° F.) of storage and shipment in original containers for a minimum of six months after delivery. *Odor* — The dishwashing compound shall be free from objectionable odor in either dry form or in solution. *Abrasion* — Use of the product shall produce no abrasion or undue wear on the surface of utensils, dishes or dishwashing machines. *Toxicity* — Shall be relatively non-toxic and shall not cause irritation of the skin. *Instructions* — Unless otherwise specified, suitable cards, not less than 3×10 inches in size, with the instructions (detailed in the specification) shall be placed inside the top and bottom of each container.

Permissible constituents — Constituents permissible in dishwashing compounds covered by this specification include sodium phosphates, sodium carbonates, sodium metasilicate, moisture, and small proportions of sodium hydroxide. The composition of the material shall be as shown in table above.

Inert constituents — Total inert constituents (other than moisture and insoluble matter), including chlorides (as NaCl) sulphates (as

Na_2SO_4) and other constituents not listed in permissible constituents paragraph, shall not exceed 3 per cent. *pH and buffer capacity* — When tested as described in paragraph F-23, (in the complete specification) the compound solution shall have an initial pH of not less than 10.5 and not higher than 12.0. The addition of 2 ml. of 0.1 N hydrochloric acid shall not reduce the pH of the solution by more than one unit. *Water-softening capacity (ability to prevent precipitation of calcium and magnesium compounds)* — When tested as described in paragraph F-2f of complete specification, the weight of precipitate obtained shall not exceed 11 mg. *Corrosion* — When tested as described in paragraph F-2g of the complete specification, aluminum test specimens shall not be discolored or etched, nor shall a dense white film be formed on the surfaces. Slight dulling of the surfaces, or formation of a faint white film on the test specimens, shall not be interpreted as evidence of nonconformity with the requirement. *Foaming* — A 0.5 percent solution of dishwashing compound shall produce not more than 10 ml. of foam when tested as described in paragraph F-2h of the complete specification. *Lack of lumping or caking and particle size* — At least 99 percent of the material shall pass through a No. 4 standard sieve conforming to the requirements of Federal Specification RR-S-366, when tested by method 210.1 of Federal Specification P-S-536. The particle size of mechanical mixtures of powdered ingredients shall be uniform, in order to minimize segregation of the ingredients.

Sweeping Compound (P-C-591b)

Proposed revision specification.

Sweeping compound shall consist of a uniform mixture of the materials as specified for each type and shall be artificially colored or uncolored as specified by the purchaser. If desired, shall conform to the color of a sample mutually agreed upon by buyer and seller. The material shall not stain flooring surfaces on which it is used.

Type I. — Sawdust-Sand-Mineral Oil.

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The material shall not give off flammable vapors when tested according to paragraph F-2b. Matter volatile at 105-110° C. shall be not more than 10 per cent by weight. Refined mineral oil (such as paraffin oil) shall be not less than 15 per cent and not more than 20 per cent by weight. The acid number (milligrams of KOH per gram of sample) of the extracted oils shall not exceed 17. The saponification number (milligrams of KOH per gram of sample) of the extracted oils shall not exceed 20. Clean, fine, feldspar sand shall be not less than 35 per cent and not more than 50 per cent by weight. Not more than 1 per cent by weight of sand (based on sand content) shall be retained on a No. 20 sieve when tested according to paragraph F-2k. The remainder shall be finely ground sawdust. Not more than 1 per cent by weight of sawdust (based on sawdust content) shall be retained on a No. 8 sieve when tested according to paragraph F-2k.

Type II — Sawdust-Sand-Water wax emulsion.

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The material shall not give off flammable vapors when tested according to paragraph F-2b. Matter volatile at 105-110° C. shall be not more than 12 per cent by weight.

Clean, fine, feldspar sand shall be not less than 60 per cent and not more than 70 per cent by weight. Not more than 1 per cent by weight of sand (based on sand content) shall be retained on a No. 20 sieve when tested according to paragraph F-2k. Finely ground sawdust shall be not less than 5 per cent and not more than 10 per cent by weight. Not more than 1 per cent by weight of sawdust (based on sawdust content) shall be retained on a No. 8 sieve when tested according to paragraph F-2k. The remainder shall be waxes and emulsifying agents.

Liquid Automobile Polish (P-P-546)

Shall be suitable for use on lacquer, baked enamel and synthetic enamel finishes. Shall have no objectionable odor. Shall be a stable aqueous emulsion containing a suitable abrasive in suspension. The polish shall be a free-flowing fluid that can readily be applied with a cotton cloth and shall spread easily. Non-volatile matter, total solids, shall be not less than 25 per cent by weight. Ash content, based on non-volatile, shall be not less than 35 per cent nor more than 50 per cent by weight. No free caustic alkali. Neutralization number shall be not more than 5. All of the material shall pass through a No. 200 siège, and not less than 95 per cent, based on ash content, shall pass through a No. 325 sieve. Volatile matter shall be essentially water. Physical and performance tests are also specified.

Liquid Furniture Polish (P-P-552)

The polish shall be free from abrasives and suitable for use on finishes on wood and metal furniture. It shall have no objectionable odor. It shall be a stable colloidal emulsion of oil in water. It shall be a free-flowing fluid that can readily be applied with a cotton cloth and easily spread. Non-volatile matter shall be not less than 40 per cent by weight, and shall be essentially a well-refined petroleum

oil. Ash content, based on non-volatile matter, shall be not more than 1 per cent by weight. Volatile matter shall be essentially water. No free caustic alkali shall be present. The saponification number shall be not more than 30. Physical and performance tests are also specified.

Metal Polish (P-P-556a)

Metal polish shall be of the following types:

Type I. Powder.

Type II. Liquid

Type III. Paste.

Metal polish of each type shall be of but one grade. It shall be a product, with or without a finely divided abrasive, suitable for the removal of tarnish from brass, nickel, copper, and other metals and capable of producing a luster thereon.

All types of metal polish shall have good tarnish removing properties, good luster-producing properties, shall give good protection to the polished surface against tarnishing influences, and shall be so constituted and prepared that, by reason of application and polishing, they—

(1) Shall not scratch metals.

(2) Shall not leave the metal discolored or caked with abrasive material.

(3) Shall not be detrimental in any manner to metals.

(4) Shall not show any unnecessary caking of type I or III polish in the containers. The abrasive material in liquid (Type II) polish, shall show no caking in the container, which cannot be readily put into suspension by thoroughly shaking the containers. The abrasive material shall be of such particle size that 100 per cent will pass through a No. 200 sieve.

Metal polish shall be free from acids, cyanide of potassium or other cyanides, grit, or other ingredients having detrimental effects on metals. Shall clean quickly, leaving a bright polished surface, with a full luster for the material being polished. When so specified the tarnish-removing and luster-producing properties shall be equal

in quality to those of a standard sample furnished or approved by the purchaser. The polished surface shall remain free from corrosion or discoloration for a period of at least 24 hours.

Polish shall have good keeping qualities and be guaranteed for 1 year from the date of actual receipt at point of delivery. During the guaranty period the successful bidder shall replace without cost any metal polish which through deterioration, evaporation, caking in the container, or other causes, becomes unfit for use. Replacement metal polish shall also be guaranteed for 1 year from date of receipt. The metal polish will be stored in original unopened shipping containers, not subjected to freezing temperature or to excessive artificial heat. The amount of volatile matter, at 105° to 107° C., in either type II or III polish, shall not exceed 70 per cent by weight, of the polish. The flammability of the liquid contents of types II and III polishes shall not be not less than 39° C.

Silver Polish (P-P-571b)

Silver polish shall be of the following types:

Type I. Liquid.

Type II. Paste.

Type III. Powder.

Silver polish shall be of but one grade, and shall consist solely of finely ground diatomaceous or infusorial earth, prepared as a powder (Type III) or suitably compounded with a neutral soap, to produce a liquid (Type I) or paste (Type II).

All types of silver polish shall have—

(a) Good tarnish-removing properties.

(b) Good luster-producing properties and shall be so constituted and prepared that by reason of application and polishing, they—

(1) Shall not scratch silver ware.

(2) Shall not leave silver discolored.

(3) Shall not leave any residue (which will cause discoloration)

not removable by washing in warm soapy water.

(4) Shall not show any unnecessary caking of Type II or III polish in the containers. The abrasive material in liquid (Type I) polish, shall show no caking in the container which cannot be readily put into suspension by thoroughly shaking the containers.

The diatomaceous or infusorial earth in all types of silver polish shall be of such particle size that 100 per cent will pass through a No. 200 sieve.

Silver polish shall be free from acids or cyanides. Shall clean quickly leaving a bright polished surface, with a full luster for the material being polished. It shall have good keeping qualities and be guaranteed for 1 year from the date of actual receipt at point of delivery. During the guaranty period the successful bidder shall replace, without cost, any silver polish which through deterioration, evaporation, caking in the container or other causes, becomes unfit for use. Replacement silver polish shall also be guaranteed for 1 year from date of receipt. The silver polish will be stored in original unopened shipping containers not subjected to freezing temperature or to excessive artificial heat. The amount of volatile matter, at 105° to 107° C., in either Type I or II polish, shall not exceed 70 per cent by weight, of the polish. The flammability of the liquid contents of Types I and II polishes shall be not less than 39° C.

Stove Polish (P-P-576)

Stove polish shall produce a deep, lustrous black color when applied as directed by the manufacturer. It shall produce no odors upon burning and shall produce a durable coating that will not readily be burned off.

Type I.—Polish, stove, liquid, shall be of such consistency that the addition of a fluid will not be necessary in order to make it free-flowing. The vehicle of the polish shall be a non-inflammable liquid.

Type II. — Polish, stove,

paste, shall be non-inflammable and shall be of such consistency that it can be readily applied.

Type III. — Polish, stove, powder, shall readily form a paste with water, and shall be non-inflammable.

Type IV. — Polish, stove, cake, shall readily disintegrate in water and form a paste and shall be non-inflammable.

Scouring Powder for Floors (P-P-591a)

Scouring powder for floors shall be of the following types, as specified: Type I—for fine marble floors; Type II—for tile or ceramic and terrazzo floors; Type III—soap scouring compound.

Type I—(For fine marble floors).

Matter volatile at 105° ±2° C. shall not exceed 10 per cent. The sum of sodium carbonate (Na_2CO_3) and anhydrous soap and/or active anhydrous salt-free synthetic detergent shall not exceed 7 per cent nor be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH) shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. The material shall not scratch nor discolor marble.

Type II—(For tile or ceramic and terrazzo floors).

Matter volatile at 105° ±2° C. shall not exceed 10 per cent. The sum of sodium carbonate (Na_2CO_3) and anhydrous soda soap and/or active anhydrous, salt-free synthetic detergent shall not be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 80 per cent nor more than 95 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than

10 per cent of residue retained on a No. 80 sieve.

Type III — (Soap scouring compound).

Matter volatile at $105^{\circ} \pm 2^{\circ}$ C. shall not exceed 6 per cent. Carbonated alkali, calculated as sodium carbonate (Na_2CO_3), shall not be less than 6 per cent nor more than 20 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Anhydrous soap and/or active anhydrous salt-free synthetic detergent shall be not less than 3 per cent nor more than 10 per cent. Insoluble siliceous material shall be not less than 60 per cent nor more than 90 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve.

**Scouring Powder for Glass
(P-P-596a)**

Shall be a fine, uniform powder, and shall be suitable for cleaning highly polished glass surfaces which must transmit light efficiently, such as cabin windows and windshields of aircraft.

The material shall clean glass surfaces satisfactorily without scratching the glass or leaving an oily or other film on the surface. The material shall be a uniform, free-flowing powder, shall be scented or unscented, and shall be white or light gray in color. Matter volatile at $105^{\circ} \pm 2^{\circ}$ C. shall not exceed 4 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 5 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 93 per cent, and shall consist of ground feldspar or other insoluble siliceous abrasive that will not scratch highly polished glass surfaces. All of the insoluble siliceous material shall pass through a No. 200 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap

shall be not less than 4 per cent and shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at $105^{\circ} \pm 2^{\circ}$ C., insoluble siliceous material, and alkali as alkaline salts.

Floor Oil; Mineral (P-O-361)

Floor oil shall be a straight-run petroleum distillate suitable for use on wood floors. It shall have no objectionable odor; and may be perfumed with cedar oil, pine oil, or similar materials, when specified. It shall be a clear well-defined petroleum oil free from sediment and other foreign material, and shall meet the following requirements:

The viscosity shall be not less than 70 nor more than 110 seconds (Saybolt Universal) at 100°F . The flash point shall be not less than 300°F . (open cup). The color shall be not darker than 3 N. P. A. (Lemon pale) (ASTM No. 3). The pour point shall be not more than 30°F . The saponification number shall not exceed 1.

**Floor Wax; Solvent-Type, Liquid
(With Resins) (P-W-134)**

The liquid wax shall dry to a film that polishes easily to a hard lustrous flexible surface. It shall not be so highly colored as to stain the surface, and shall dry within 45 minutes to a semi-transparent, non-tacky film which shall show no signs of whiteness. It shall consist essentially of blended waxes with small amounts of resins in a volatile organic solvent. It shall be a heavy bodied liquid mixture of sufficient fluidity to permit freedom of application at 20° to 25° C. There shall be no appreciable settling of the suspended material. The liquid wax shall be smooth and shall be free

from hard particles and granules.

Nonvolatile Matter (Total Solids).—There shall be not less than 11%, by weight, of nonvolatile matter in the liquid wax. The nonvolatile material shall meet the requirements shown in the table above:

Volatile Organic Solvent (Vehicle).—Shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. (closed cup).

Physical and Performance Tests.—Shall meet tests specified in paragraph F-2b.

**Water Emulsion Floor Wax
(P-W-151b)**

New proposed Federal Specification.

The floor wax shall dry to a non-tacky, lustrous finish without rubbing, buffing, or polishing. The film produced shall adhere firmly to the surface without checking, cracking, or peeling and shall be transparent and practically colorless. The floor wax shall be suitable for use on sealed floors and resilient flooring of all kinds. It shall have no objectionable odor. It shall be a stable aqueous colloidal emulsion of waxes. The emulsion shall be a free-flowing fluid that can readily be applied with an applicator such as lamb's wool, cotton cloth, or a mop to spread easily and uniformly.

The floor wax shall meet the following requirements:

Nonvolatile matter (total solids).—Shall be not less than 12 per cent.

Wax content and softening point.—The wax content of the total solids shall be not less than 65 per cent, by weight, and shall have a softening point of not less than 80° C.

Ash content (based on non-

Requirements for Non-Volatile in P-W-134

	<i>Minimum</i>	<i>Maximum</i>
Softening Point	71° C	..
Acid Value .....	..	18
Saponification Value	40	85
Iodine Number (WIJS)	15	22
Ash Content, Per Cent.....	..	0.5

volatile matter content).—Shall not exceed 3.5 per cent.

Volatile solvents.—Shall be free from petroleum distillates and other organic volatile solvents. The distillate shall consist of not less than 99 per cent of water.

Sediment.—Shall be not more than 2 per cent (by volume).

Alkalinity.—The pH range shall not be greater than 10.0 nor less than 7.0.

Stability.—Shall show no gelling or separation.

Physical and performance tests are also provided.

Floor Wax (P-W-158)

New proposed revised Federal Specification.

The product shall dry to a film that polishes easily to a hard lustrous flexible surface. It shall not be so highly colored as to stain the surface; and shall dry within 45 minutes to a semitransparent non-tacky film which shall show no signs of whiteness. Floor wax shall consist essentially of blended waxes in a volatile organic solvent. It shall be free from rosin.

Type I (liquid).—Shall be a heavy bodied liquid mixture of suitable consistency to permit freedom of application at 20° to 25° C. There shall be no appreciable settling of the suspended material. The liquid wax shall be smooth and shall be free from hard particles and granules. There shall be not less than 11 per cent, by weight, of non-volatile matter in the liquid wax. The nonvolatile matter shall meet the following requirements:

<i>Minimum</i>	<i>Maximum</i>
Softening point	75°C.
Ash content, per cent..	0.5

The solvent shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. Physical and performance tests are also provided.

Type II (paste).—Shall be a semi-solid material at 20° to 22° C. There shall be no separation of liquid

from paste. The paste shall be smooth and shall be free from hard particles and granules. There shall be not less than 20 per cent, by weight, of non-volatile matter in the paste wax. The nonvolatile material shall meet the following requirements:

<i>Minimum</i>	<i>Maximum</i>
Softening point	71°C.
Ash content, per cent..	0.5

The vehicle shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. Physical and performance tests are also provided.

Floor Sealer (Lacquer Type) (TT-S-171)

The manufacturer is given wide latitude in the selection of raw material and processes of manufacture, provided that the sealer produced meets the requirements and tests. The product, when applied in accordance with directions shall satisfactorily seal the pores of the wood leaving the wood surface in such condition as to provide a satisfactory foundation for a finishing material such as varnish, liquid or paste wax or water-emulsion wax. It shall be "natural" in color and of sufficient fluidity to permit application with a bristle brush or lamb's wool mop.

The floor sealer shall be a clear liquid free from sediment or suspended matter and shall be of such fluidity that no further thinning will be required. It shall meet the following requirements:

Nonvolatile matter.—Not less than 14 per cent.

Set-to-touch. In not more than 15 minutes.

Dry hard and tough.—In not more than 3 hours.

Nitrocellulose.—Not less than 20 per cent by weight of the non-volatile content.

Toughness.—Air-dried film on metal shall withstand rapid bending over a rod 3 mm. ($\frac{1}{8}$ inch) in diameter.

Viscosity.—Not more than 0.220 poise.

Performance tests are also specified.

Wood and Cork Floor Sealers (TT-S-176a)

Floor sealers shall be furnished in one grade and two classes for use on wood and cork floors as follows: Class 1 — minimum non-volatile content 40 per cent; Class 2 —minimum nonvolatile content 25 per cent. The manufacturer is given wide latitude in the selection of raw materials and processes of manufacture, provided that the sealer produced meets the requirements and tests described in this specification.

When applied in accordance with directions the product shall satisfactorily seal the pores of the flooring by absorption, leaving no apparent surface film and shall provide a satisfactory foundation for a finishing material such as varnish, liquid or paste wax, or water-emulsion wax. Unless otherwise specified, floor sealer shall be furnished "natural" in color. Floor sealer shall have sufficient fluidity to permit application with a bristle brush or lamb's wool mop.

Both classes of sealers shall be nonpigmented materials and shall be capable of being thinned with turpentine or mineral spirits. The respective sealers shall meet the following requirements: *Nonvolatile matter*—Class 1, not less than 40 per cent; Class 2, not less than 25 per cent. *Set to touch*—in not less than 1 hour and not more than 4 hours. *Dry, hard and tough*—in not more than 18 hours. *Water test*—The sealer shall meet specified cold water test.

Toughness.—Shall pass a 75 per cent Kauri reduction test at 25° C. (77° F.).

Flash point.—Shall be not below 30° C. (86° F.). (Closed-cup.)

Viscosity at 25° C.—Class 1, not more than 0.50 poise; Class 2, not more than 0.220 poise.

Skinning.—Shall be negligible when received and after 48 hours in

a tightly closed half-filled container.

Odor—The odor in the can, during drying, and/or after drying shall not be abnormally offensive or disagreeable.

Performance tests are also specified.

Liquid Insecticide (Fly Spray) (O-I-541a)

The insecticide shall not cause irritation to man nor be poisonous to man when applied in the usual manner. It shall have no greater detrimental action on metal or paint surface than a specified test solvent. It shall have no objectionable odor. It shall be formulated from a petroleum distillate base, free from kerosene odor and practically free from all odor, shall be clear and free from suspended matter and shall contain active ingredients so that it will test not more than 2 per cent below the O.T.I. in average percentage knock-down and at least 16 per cent above the O.T.I. in average percentage kill.

Initial boiling point shall not be below 350° F. and end point not above 530° F. Flash point shall be not less than 125° F. (closed cup). No residual odor shall be present, under a specified test. The product shall meet specified test for staining properties and corrosion.

Liquid Insecticide (Household) (O-I-546a)

The specification follows closely along the lines of the specification for O-I-541a, with an addition requirement as follows, covering minimum pyrethrin content "There shall be not less than 0.13 gram of Pyrethrin I with the normally accompanying amount of Pyrethrin II in 100 ml. of the liquid insecticide. Any additional ingredients which when incorporated in the product will comply with the requirements of this specification may be used to bring the strength of the product up to the performance requirements." The performance test specifies that it must test not more than 2% below the O.T.I. in knock-down and at least equal to the O.T.I. in kill.

Shaving Cream and Soap (FFF-C-641)

Shaving soap and cream shall be of the following types and classes:

Type I. Soap:

- Class (A)—Cakes.
- Class (B)—Stick.
- Class (C)—Powder.

Type II. Cream:

- Class (A)—Lather cream.
- Class (B)—Brushless cream.

Shaving soaps, Type I, shall be high-grade products free of caustic alkalinity that yield a heavy, creamy lather that will remain moist upon the face until the shaving is completed. In the case of Class B (stick), the soap shall adhere to the face when the stick is moistened and rubbed thereon. In the case of class C (powder), the material shall be free-flowing and shall not cake in the container.

Lather cream — Class A, shall be a soft, uniform cream or paste free from free alkali. It shall distribute well into the bristles of a shaving brush and shall yield a heavy creamy lather that will re-

main moist upon the face until the shaving is completed.

Brushless cream—Class B shall be a soft, uniform cream or paste free from free alkali.

Type I. Shaving soap, Classes A, B, and C—

Color—shall be as specified by the purchaser. *Odor*—shall be pleasant and shall be as specified by the purchaser. *Lathering quality*—shall be satisfactory. Shall conform to the following test:

Shake 100 ml of a 0.2 per cent (based on the nonvolatile matter) solution of the soap (Type I, classes, A, B, and C and Type II, class A) in distilled water at room temperature in a stoppered 200-ml graduated cylinder 30 times in 15 seconds, and let stand at room temperature for 1 hour. The volume of foam above the liquid shall extend to the top of the cylinder and shall not decrease more than 10 per cent of its original volume in 1 hour.

Caking (Class C only)—The material shall be free-flowing and shall not cake in a closed container at room temperature.

Type II. Shaving cream. Classes A and B—

Color—shall be as specified

Detail Requirements for Shaving Soap

TYPE I	Classes A and B cake and stick Class C powder			
	Min.	Max.	Min.	Max.
	Per Cent	Per Cent	Per Cent	Per Cent
Matter volatile at 105° C.....	—	10	—	2
Matter insoluble in hot 95 per cent ethyl alcohol.....	—	.8	—	.8
Free alkali	—	None	—	None
Free fatty acids (calculated as stearic acid).....	—	1.0	—	1.0
Matter insoluble in hot distilled water.....	—	.4	—	.4
Anhydrous soap (calculated as potash soap).....	87	—	96	—
Amount passing a No. 20 sieve.....	—	—	100	—

Detail Requirements for Shaving Cream

TYPE II	Class A lather cream Class B brushless cream			
	Min.	Max.	Min.	Max.
	Per Cent	Per Cent	Per Cent	Per Cent
Moisture (toluene distillation method).....	—	50	—	70
Matter insoluble in hot 95 per cent ethyl alcohol.....	—	.3	—	—
Free alkali	—	None	—	None
Free fatty acid (calculated as stearic acid).....	—	6.5	15	—
Matter insoluble in hot distilled water.....	—	.3	—	—
Anhydrous soap (calculated as potash soap).....	40	—	—	—

by the purchaser. *Odor*—shall be pleasant and shall be as specified by the purchaser.

Lathering quality (Class A only)—shall be satisfactory. Shall conform to the test described above.

Type I. Shaving soap, Classes A, B, and C—shall conform to the detail requirements shown in the accompanying table.

The percentage of volatile matter shall be computed, and reported on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed volatile matter content of 10 per cent for Classes A and B and of 2 per cent for Class C.

Technical Trisodium Phosphate (O-T-671a)

Technical trisodium phosphate shall be a white, uniform product and may be either granular, flake, or crystalline.

It shall contain not less than 98 per cent of trisodium phosphate calculated as $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$, from the total phosphoric anhydride

(P_2O_5). It shall conform to the following detail requirements:

	Minimum Per Cent	Maximum Per Cent
Trisodium phosphate, calculated as $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$, from total P_2O_5	98	—
Total alkalinity to methyl orange, calcu- lated as Na_2O	16	19
Phosphoric anhydride (P_2O_5)	18.3	—
Matter insoluble in water	—	0.1

SOAP SALES

(From Page 157)

pied second spot in volume of soap shipped. In the first three months of 1947, 686,688,184 pounds of soap other than liquid, having a sales value of \$162,211,579, were delivered. The third quarter figures showed 696,506,000 pounds of non-liquid soap, worth \$144,564,000, shipped. In last place from the standpoints of volume of soap shipped and worth was the second three months of 1947, when 634,674,816 pounds of soap, having a

sales value of \$144,058,421, were reported.

Sales and deliveries of liquid soaps were nearly a million gallons smaller in 1947 than in 1946. Sales value of liquid soaps was about \$650,000 under the 1946 figure in 1947. Shipments of liquid soap and their worth by quarters during 1947 follow: 967,655 gallons at \$1,122,-638; 679,000 gallons at \$1,013,000; 817,000 gallons at \$999,000, and 636,000 gallons at \$809,000. The year's total of 3,109,000 gallons, worth \$3,944,000, compares with 4,011,000 valued at \$4,599,571 for 1946.

FAT AND OIL USE

(From Page 155)

year. Lard was another fat that fluctuated markedly, its use going from only 744,000 pounds in 1946 to nearly six million pounds the following year. Oleo oil dropped from three million pounds in 1946 to 40,000 pounds in 1947. Olive oil consumption in 1947, still small, was about the same as in 1946.

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SOAP and Sanitary Chemicals 254 WEST 31st ST., NEW YORK 1

Soap and Detergent Definitions

American Society for Testing Materials
Committee D-12 on Soaps and Other
Detergents.

Standard Definitions of TERMS RELATING TO SOAPS AND OTHER DETERGENTS

A.S.T.M. Designation: D 459-45T

Issued, 1937; Revised 1938, 1939, 1940,
1941, 1942, 1943, 1944, 1945, 1946,
1947; Made standard 1948.

Alkaline Detergent — A water-soluble alkali or alkaline salt having detergent properties, but containing no soap.

Anhydrous Soap — Soap, free from water and all other concomitants.

Note — The word "anhydrous" usually means free from water, but in the soap industry it has the additional meaning stated.

Buffer Action — The resistance of a solution to change in pH.

Builder — A material added to soap or synthetic detergent to improve its effectiveness under the conditions of use.

Cleaning — A process of removing undesirable matter.

Detergency — Effectiveness of cleaning.

Detergent — A composition which cleans.

Detergent, Anionic — A detergent which produces negatively charged colloidal ions in solution.

Detergent, Cationic — A detergent which produces positively charged colloidal ions in solution.

Detergent, Non-Ionic — A detergent which produces electrically neutral colloidal particles in solution.

Dispersing Agent — A material which increases the stability of a suspension of particles in a liquid medium.

Dry Cleaning — Cleaning fabrics in a substantially non-aqueous liquid medium.

Dry-Cleaning Detergent — (Dry-Cleaning Aid) — A detergent which when added to a dry-cleaning solvent increases cleaning effectiveness.

Emulsifying Agent — A material which increases the stability of a dispersion of one liquid in another.

Foaming Agent — A material which increases the stability of a suspension of gas bubbles in a liquid form.

Filler — A material added to a soap or other detergent which does not improve its attractiveness or its effectiveness under the conditions of use.

Penetrating Agent — A material which increases the penetration of a liquid medium into a porous material.

Scouring — A wet process of cleaning by chemical or mechanical means, or both.

Soap — The product formed by the saponification or neutralization of fats, oils, waxes, rosins, or their acids with organic or inorganic bases.

Note — Various descriptive adjectives are applied to the name soap to indicate certain characteristics as follows:

- (a) Method of manufacture, for example, boiled soap, cold-process soap.
- (b) Physical form, for example, bar soap, chip soap, liquid soap, powdered soap.
- (c) A special property, for example, floating soap, low-titer soap, milled soap, soft soap.
- (d) A particular ingredient, for example, grit soap, tar soap.
- (e) A particular application, for example, automobile soap, dry-cleaning soap, salt-water soap.

Soap, Blended — (for example Blended Palm Oil Soap) — A soap in which more than half but not all the fatty acid stock is from the source stated.

Soap, Built — A mixture of soap and one or more builders containing not less than 50 per cent of anhydrous soap.

Soap Powder — A mixture in powdered form of soap and one or more alkaline detergents, but principally composed of the latter.

Soap, Straight — (for example Straight Palm Oil Soap) — A soap in which the fatty acid stock is solely from the source stated.

Soil — Undesirable matter to be removed by cleaning.

Soil Redeposition — Deposition of removed soil on a surface during a cleaning process.

Surface Active Agent — A material which when added to a liquid medium modifies the properties of the medium at a surface or interface.

Note — Surface Active Agent is the general term which includes soluble detergents in liquid medium, dispersing agents, emulsifying agents, foaming agents, penetrating agents and wetting agents.

Synthetic Detergent — A detergent produced by chemical synthesis and comprising an organic composition other than soap.

Titer (pron. te'ter) (of fatty acids) — The maximum temperature achieved during the solidification of fatty acids, which have been cooled below the melting point by a standardized procedure.

Washing — Cleaning in an aqueous medium.

Water-Break — Failure of water to maintain a continuous film on metallic, vitreous or similar surfaces on withdrawing from clean water.

Wet Cleaning — A term used in the dry cleaning industry to denote cleaning in an aqueous medium.

Wetting Agent — A material which increases the spreading of a liquid medium on a surface.

Whiteness - Retention — Comparative whiteness of original and cleaned fabric.

HOW TO REGISTER

(From Page 163)

acid. This information has been requested for the convenience of mixers and the assistance of State or Federal authorities who may be called on for information about the product. Kansas and Oregon require a statement giving the weight per gallon on liquid herbicides. This is useful information for all and has been included in Figure 4. (p. 163)

The supplemental information as shown on the data sheets includes items required by certain states and should be useful to state officials generally. The heading provides a suitable place for special comments such as "Manufacture of this product has been discontinued but registration is necessary because of shelf stocks."

Cover sheets and product data sheets have been discussed. In almost every case labels and labeling must also be submitted. The instructions must be read carefully to be sure that the required number of cover sheets, data sheets and labels are submitted.

The new Association of Economic Poisons Control Officials supports the new procedure and has appointed a committee to further its acceptance in all states requiring registration. It is expected that adoption will be general in 1948. The new procedure should benefit all concerned but to make it work and avoid unnecessary difficulties all must *read the laws, regulations and instructions*.

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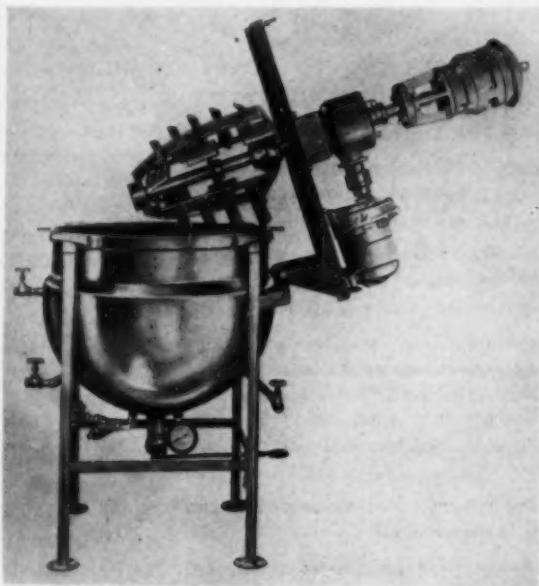
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Perfuming Material Specifications

*Specifications and Standards Prepared
By The Essential Oil Association for
Several Important Essential Oils*

BOOK OF SPECIFICATIONS & STANDARDS

NOTES

Descriptive Characteristics: The statements concerning descriptive characteristics given in the individual monographs are not intended as standards or tests for purity.

Specific Gravity: Unless otherwise specified the figure 15° C. is used as the 15° C.

basis for the specifications and standards that follow. A correction factor of .0007 must therefore be applied for each degree.

Optical Rotation: The figures given in the monographs are at room temperature approximately 20° C.

Refractive Index: The figures given are at room temperature approximately 20° C. unless otherwise specified.

Solubility: The figure given in the monographs are at 25° C. unless otherwise specified.

Mineral Oil: The mineral oil used in the solubility definition has a viscosity at 100° C. of

65

—

75

Solvents: The solubility in fixed and volatile oils, and in such solvents as mineral oil, benzyl benzoate, glycerine and propylene glycol appearing in the monographs are listed, for the sake of uniformity, in alphabetical order.

Specifications and Standards for Oil Bois de Rose Brazilian Other General Name

Oil Rosewood.

Botanical Nomenclature

1. Indefinite.

2. Possibly:

(a) ANIBA ROSAEODORA var. Amazonica (Ducke), Family: Lauraceae.

(b) ANIBA PARVIFLORA (Mez), Family: Lauraceae.

(c) OCOTEA CAUDATA (Mez) (LICARIA GUIANENSIS) (Aubl.), Family: Lauraceae.

(d) PROTIMUM (ICICA) ALTISIMUM (March), Family: Burseraceae.

Preparation

By steam distillation of wood.

Physical and Chemical Constants

Specific Gravity @ 15° C. 0.8750—0.8950
Optical Rotation -4° to $+5^{\circ}$

Refractive Index @ 20° C. 1.4620—1.4685
Total Alcohols: 84 to 92%

Proceed as directed for the determination of Linalool and oils containing Linalool. See Page C. Use approximately 1.2 gms. of acetylated oil accurately weighed for the subsequent saponification.

Solubility: Soluble in some dilution between 3.5 and 6 volumes of 60% alcohol and in 2 volumes of 70% alcohol.

Color and appearance: Pale yellow to yellow liquid.

Descriptive Characteristics

Stability:

Alkali: Relatively stable to alkali, although some change takes place.

Acids: In the presence of some organic acids esterification of the alcohol takes place. In the presence of many strong inorganic acids, decomposition takes place. Degree of change depends upon conditions.

Solubility

Benzyl Benzoate: Generally soluble.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Slightly soluble.

Mineral Oil: It is usually soluble in $\frac{1}{2}$ volume of mineral oil, but sometimes becomes opalescent or turbid; when further additions of the solvent are made.

Propylene Glycol: Soluble in all proportions.

Containers

Should be shipped in glass, tin lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in well stoppered full containers, in a cool place protected from light.

Specifications and Standards for Oil Petitgrain Paraguay Other General Names

Oil Petitgrain South American.

Botanical Nomenclature

Citrus bigaradia, Risso.

Preparation

Obtained by steam distillation from the leaves and twigs of the bitter orange tree; at times the fruit adhering to the branches is distilled with it, indicated by a dextrorotatory due to some peel oil.

Physical and Chemical Properties

Color: Yellowish to slightly brown.

Specific Gravity @ 15° C. : 0.885 to 0.895.

Optical Rotation: Mostly laevorotatory up to -3° sometimes dextrorotatory up to $+3^{\circ}$.

Solubility: Soluble at some dilution between 2 and 4 volumes of 70% alcohol; however, upon further dilution it frequently becomes opalescent or turbid.

Refractive Index @ 20° C. : 1.4580 to 1.4650.

Esters: 45% to 55% (occasionally as low as 40% and as high as 60%).

Proceed as directed for the determination of esters (see page A), using approximately 2 grams of the oil, accurately weighed. The number of cc. of 0.5 N alcoholic potassium hydroxide consumed in the saponification, multiplied by 0.0981, indicates the number of grams of esters, calculated as linalyl acetate, in the oil taken for assay.

Descriptive Characteristics

Stability:

Alkali: Unstable in alkalies due to the hydrolysis of some of the esters and the liberation of free linolool and other alcohols.

Acids: In the presence of some organic or inorganic acids a change is noted, degree of change depending upon conditions.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Slightly soluble.

Mineral Oil: Usually soluble with opalescence or turbidity.

Propylene Glycol: Usually soluble with opalescence.

Containers

Should be shipped preferably in glass, tin-lined, or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in well-stoppered, full containers, in a cool place protected from light.

Specifications and Standards for Oil Spike Other General Names

Oil Lavender Spike.

Oil Lavender Spanish.

Oil Spanish Spike.

Oil Aspic.

Botanical Nomenclature

Lavandula latifolia, Vill. (Lavandula Spica D.C.), Family: LABIATAE.

Preparation

By steam distillation of the flowers.

Physical and Chemical Constants

Color and appearance: Oil Spike is a pale yellow to yellow liquid, having a camphoraceous, lavender-like odor.

Specific Gravity 15° C.: 0.900—0.915.

Optical Rotation: —5° to + 5°.

Refractive Index 20° C.: 1.4630 to 1.4680.

Esters as Bornyl Acetate: 1.5 to 3.0%.

Proceed as directed for the determination of esters, page A, using approximately 10 grams of Oil Spike, accurately weighed. The number of CC of half normal alcoholic potassium hydroxide consumed in the saponification, multiplied by 0.0981, indicates the number of grams of esters calculated as Bornyl Acetate ($C_{10}H_{17}C_6H_5O_2$) in the oil taken for assay.

Total Alcohols as Borneol: 30-40%.

Proceed as directed for the determination of total alcohols, Page B, using approximately 2.5 grams of the acetylated oil, accurately weighed, for the subsequent saponification. Calculate the per cent of total alcohols as Borneol by the following formula:

Per cent of Total Borneol ($C_{10}H_{17}OH$) in the oil tested

A X 7.712

X [1—(E X 0.0021)]

B—(A X 0.021)

A is the result obtained by subtracting the number of CC of half normal sulfuric acid required in the titration from the number of CC of half normal alcoholic potassium hydroxide originally taken.

B is the weight of acetylated oil taken, and E is the per cent of esters calculated as Bornyl Acetate.

Solubility in Alcohol: Soluble in some dilution between 1 and 3 volumes of 70% alcohol, however, upon further dilution it frequently becomes hazy.

Descriptive Characteristics

Stability:

Alkali: Relatively stable to alkali, although some change takes place.

Acids: Fairly stable to weak acids.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Slightly soluble.

Mineral Oil: Usually forms cloudy solutions.

Propylene Glycol: Soluble in all proportions.

Containers

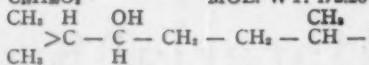
Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in well stoppered full containers, in a cool place protected from light.

Hydroxycitronellal

$C_{10}H_{18}O_2$ MOL. WT. 172.26



(Various other structures are suggested)

Preparation

Obtained by the hydration of citronellal. The basic citronellal used may be from any source such as the optically active variety from Java Citronella or the optically inactive variety from Eucalyptus Citriodora.

Physical and Chemical Constants

Color and appearance: Viscous colorless liquid having a sweet odor of the lily type.

Specific Gravity @ 15°: 0.925 to 0.930.

Optical Rotation: Depends upon the optical activity of the raw material. When prepared from the Java type + 9 to + 10.5; when prepared from Eucalyptus Citriodora type + 0.5 to — 0.5.

Refractive Index @ 20°: 1.448—1.450.

Hydroxycitronellal Content: Not less than 95%. (See page D.)

Assay — Hydroxycitronellal determination:

Proceed as directed in the hydroxylamine method for aldehydes, see page 215, using approximately 1.3 gm. of sample, accurately weighed. The difference in the cc of N required for both

— HCl

2

titrations multiplied by 0.0861 indicates the weight in grams of Hydroxycitronellal in the sample taken for assay.

Solubility in Alcohol: Soluble in 1½ and more volumes of 50% alcohol. Soluble in all proportions of 60% alcohol.

Bisulfite Test for non-aldehydic impurities: Add 9 cc of NA_2SO_3 solution* to .5 cc Hydroxycitronellal. Shake vigorously for one minute. Clear solution should be obtained (terpenes). Solution should have no minty odor (isopulegol).

* (Bisulfite Solution—Prepare a fresh solution of 30% NA_2SO_3 anhydrous by weight. To this add 4% of 10% NA_2CO_3 solution to cut down free SO_3 . Solution to be filtered clear before use if necessary.)

Descriptive Characteristics

Stability:

Acids: Easily resinified by acids.

Alkali: Easily resinified by strong alkali.

Oxidation: Very readily oxidized by exposure to air.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions in most fixed oils.

Glycerine: Slightly soluble.

Mineral Oil: Slightly soluble.

Propylene glycol: Soluble in all proportions.

Water: Slightly soluble (approximately 5%).

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Galvanized containers not recommended.

Storage

Store preferably in well-stoppered, full containers in a cool place protected from light.

Determination of Esters

Place the quantity of sample mentioned in each separate monograph, in a tared, 125-cc, Erlenmeyer flask, and weigh it accurately. Add 25-cc of half-normal alcoholic potassium hydroxide, connect the flask with a reflux condenser, and boil the mixture on a water bath for exactly one (1) hour, unless otherwise specified. Allow the mixture to cool, and titrate the excess of alkali with half normal sulfuric acid, using 10 drops of phenolphthalein T.S. as the indicator. Calculate as prescribed in each individual monograph.

Determination of Total Alcohols

Place 10-cc of the sample in an acetylation flask of 100-cc capacity and add 10-cc of acetic anhydride and 1 Gm. of anhydrous sodium acetate. Boil the mixture gently for exactly one (1) hour, cool, disconnect the flask from the condenser, transfer the mixture to a small separator, rinsing the acetylation flask with three successive, 5-cc portions of warm distilled water, and add the rinsings to the separator. When the liquids have completely separated, reject the aqueous layer, and wash the remaining oil with successive portions of sodium carbonate T.S., diluted with an equal volume of distilled water, until the last washing is alkaline to two (2) drops of phenolphthalein T.S.

Dry the resulting oil with anhydrous sodium sulfate and filter. Transfer the quantity of the dry acetylated oil mentioned in each separate monograph, to a tared, 100-cc, Erlenmeyer flask, note its exact weight, add 25-cc of half-normal alcoholic potassium hydroxide, connect the flask with a reflux condenser, and boil the mixture on a water bath for exactly one (1) hour.

Allow the mixture to cool, and titrate the excess of alkali with half-normal sulfuric acid using 10 drops of phenolphthalein T.S. as the indicator. Calculate the per cent of the total alcohols as outlined in each individual monograph.

Determination of Linalool Dimethyl Aniline—Acetyl Chloride Method

10-cc of linalool or essential oil containing linalool, previously dried with sodium sulfate, is introduced into a 125-cc g.s. Erlenmeyer flask cooled with ice and water. To the cooled oil is added 20-cc dimethyl aniline (mono-methyl free) and the contents thoroughly mixed, then 8-cc acetyl chloride (reagent grade) and 5-cc of acetic anhydride are added, the anhydride serving as a solvent to prevent crystallization of the reaction mass. The

mixture is cooled for a few minutes and permitted to stand at room temperature for $\frac{1}{2}$ hour after which time the flask is immersed in a water bath maintained at $40^{\circ}\text{ C.} \pm 1^{\circ}$ for three hours. At the end of this time the acetylated oil is washed three times with 75-cc of ice water, then with successive washes of 25-cc of 5% sulfuric acid until the separated acid layer fails to liberate any dimethyl aniline with an excess of caustic. After removal of the dimethyl aniline, the acetylated oil is washed with 10-cc of 10% sodium carbonate solution and then finally washed neutral with water.

The oil is separated, dried over anhydrous sodium sulfate and the ester value determined in the usual manner. The linalool content can thus be obtained directly from saponification tables or by substitution in the following formula:

$$\% \text{ Linalool} = \frac{\text{cc N/2 KOH} \times 154.14}{20 (\text{wt. sample}) - \text{cc N/2 KOH} \times 0.021}$$

As this test is further to be used for other oils containing Linalool, besides Linalool itself, a correction factor is necessary with oils containing significant amount of esters. For such oils, the following standard formula is recommended:

$$\% \text{ Total Linalool} = \frac{A \times 77.07 \times (1 - (E \times 0.0021))}{B - (A \times 0.021)}$$

where A = cc half-normal alkali required for saponification.

where B = weight of sample.

where E = per cent of esters calculated as linalyl acetate in the original oil.

The test is not applicable to all tertiary alcohols, but only to linalool and linalool containing oils.

Hydroxylamine Method for Aldehydes and Ketones

Preparation of Hydroxylamine solution: Triturate 0.1. Gm. of bromophenol blue with 3-cc of twentieth-normal sodium hydroxide. When solution is complete, dilute to 25-cc with distilled water. Dissolve 20 Gm. of hydroxylamine hydrochloride in 40-cc of distilled water, dilute to 400-cc with alcohol, add with stirring 300-cc of half-normal alcoholic potassium hydroxide and 2.5-cc of the bromophenol blue solution, and filter the mixture.

ASSAY METHOD: Add 75-cc of Hydroxylamine solution prepared as above to W gm. (see Note 1.) (accurately weighed of substance to be tested) and mix thoroughly.

For Aldehydes: Allow to stand at room temperature for 15 minutes.

For Ketones: Reflux gently for one hour using a water condenser or an air condenser at least 30 inches long. Cool to room temperature. (See Note 2.)

Titrate to the greenish-yellow end point of Bromophenol Blue using one-half normal hydrochloric acid. Perform a blank determination using 75-cc of the hydroxylamine solution. Subtract the number of cc of half-normal hydrochloric

acid used in the titration of the sample from the number of cc used in the blank.

$$\% \text{ Aldehyde or Ketone} = \frac{N \times 0.05 M}{W}$$

where N is difference in cc of 0.5 N HCl between blank and sample obtained above.

M is molecular weight of aldehyde or ketone in terms of which results are to be calculated.

W is weight of sample used.

Note 1: The weight of sample W should be such that the cc of Hydrochloric Acid required for the titration of the flask containing the sample is slightly more than half the cc required to titrate the blank. This weight W will be given under each individual monograph, based on the use of relatively fresh hydroxylamine solution which will give a blank titration of over 30-cc of one-half normal Hydrochloric Acid. The solution has a tendency to lose strength on standing more than about 10 days.

Note 2: Some aldehydes or ketones have been found to require longer standing or heating. In such cases the change will be noted under the individual monograph.

Note 3: The value of the factor .05 M in the above formula for calculation of percentage is given under the individual monographs.

Specifications and Standards

For

OIL LEMONGRASS

Other General Names:

There are basically two types of Lemongrass Oil commercially available: the East Indian and "West Indian" type oil.

The East Indian Oil is also known as Cochin, Native and British Indian Lemongrass Oil.

The "West Indian" type oil appears on the market designated according to geographic origin as Madagascar, Guatemala, Honduras or Florida Lemongrass Oil, etc.

Botanical Nomenclature:

East Indian Oil: *Cymbopogon flexuosus* (Stapf). *Andropogon nardus* var. *flexuosus* (Hack.).

"West Indian" type Oil: *Cymbopogon citratus* (Stapf). *Andropogon nardus* var. *criteriferus* (Hack.).

Preparation:

By steam distillation of the freshly cut and partially dried grasses.

Physical & Chemical Constants:

East Indian Oil:

Color and Appearance: The East Indian Oil is generally dark yellow to light brown-red in color and has a pronounced heavy lemon-like odor.

Specific Gravity $15^{\circ}/15^{\circ}$ C. 0.900-0.910.

Optical Rotation -3° to $+1^{\circ}$.

Refractive Index @ 20° C. 1.4830-1.4890.

Citral Content:

A. Acid Sulite Method—Not less than 75%.

Solubility—Solubility in 2 to 3 volumes of 70% alcohol, often with slight turbidity.

"West Indian" Type Oil:

Color and Appearance: The "West Indian" type Oil varies from light yellow to light brown or orange. Its odor is lemon-like but of lighter character than the East Indian.

Specific Gravity $15^{\circ}/15^{\circ}$ C. 0.875-0.900.

Optical Rotation -3° to $+1^{\circ}$.

Refractive Index @ 20° C. 1.4830-1.4890.

Citral Content:

A. Acid Method—Not less than 75%.

Solubility—Yields cloudy solutions in 70, 80, 90 and 95% alcohol.

Assay

A. Acid Sulite Method: Introduce 10cc of Lemongrass Oil into a 100cc. Cassia flask and add 75cc. of a 30% solution of sodium metabisulfite. Heat the mixture in a water bath to 85° and shake the flask intermittently for one-half to one hour. Then add sufficient bisulfite solution to raise the meniscus within the graduated portion of the flask. On cooling, the volume of insoluble oil expressed in per cent subtracted from 100 represents the citral content.

Descriptive Characteristics

Stability:

Alkali: Lemongrass oils slowly decompose in the presence of alkalies.

Acids: Strong inorganic acids tend to polymerize the oil. Weak organic acids have less effect.

Solubility:

Propylene Glycol: The East Indian oil is soluble in all proportions of propylene glycol with slight turbidity or cloudiness.

The "West Indian" type oil has limited solubility in propylene glycol (about 10% accompanied by cloudiness).

Mineral Oil: Soluble with cloudiness or turbidity.

Fixed Oils: Soluble in most fixed oils.

Benzyl Benzoate: Soluble in all proportions, generally with slight turbidity.

Diethyl Phthalate: Soluble in all proportions with slight turbidity.

Glycerine: Slightly soluble.

Containers

Should be shipped preferably in glass, aluminum or tin-lined containers. Good quality galvanized containers are suitable, provided long storage is not contemplated.

Storage

Store in full containers and avoid exposure to light and excessive heat.

Specifications and Standards For

TERPINYL ACETATE

$C_{16}H_{12}O_2C_2H_5$ Mol. Wt.: 196.28

Preparation

Acetylation of terpineol.

Physical & Chemical Constants

Color and appearance: Colorless liquid having an odor suggestive of bergamot and lavender.

Specific gravity at 15° C.: 0.958 to 0.968.

Optical rotation: between -0°30' and +0°30'.

Refractive index @ 20° C.: 1.4640 to 1.4660.

Ester Content: 97-100% (calculated as terpinyl acetate).

Method: Proceed as directed for the determination of esters, Page A, using approximately 1.0 g of sample accurately weighed. Reflux the mixture on a water bath for exactly two hours. The number of cc. of half normal potassium hydroxide consumed in the saponification, multiplied by 0.0981 indicates the number of grams of ester calculated as Terpinyl Acetate in the sample taken for assay.

Solubility in alcohol: Soluble in 5 or more volumes of 70% alcohol.

Descriptive Characteristics

* Solubility:

Fixed Oils: soluble in all proportions.
Diethyl Phthalate: soluble in all proportions.

Benzyl Benzoate: soluble in all proportions.

Mineral Oil: soluble in all proportions.
Water: slightly soluble, approx. 0.1%.
Glycerin: slightly soluble, approx. 0.1%.

Stability:

Acids: Not very stable; strong acids transform terpinyl acetate into terpenic products.

Alkali: Stable in neutral and weak alkaline media; strong alkalis saponify the ester.

Oxidation: Stable.

Containers

Terpinyl acetate should be shipped in glass, tin, aluminum, galvanized iron.

Specifications and Standards For

TERPINEOL

$C_{10}H_{18}O$ Mol. Wt.: 154.24

Formula: Mixture of Isomers

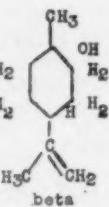
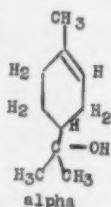
Preparation

Obtained from terpin hydrate by splitting off the elements of water by chemical means.

Physical & Chemical Constants

Color and appearance: Colorless liquid, viscous at room temperature, having an odor of the lilac type.

Specific gravity @ 15° C: 0.936 to 0.941.

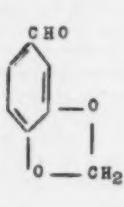
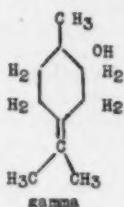


sembling heliotrope, free of safrol by odors.

Congealing Point 35° C. minimum.

Melting Point: 35.5°-37° C.

Aldehyde content: 99.0% minimum calculated as Heliotropine.



Assay

Heliotropine Determinations

Proceed as directed on Page D, using approximately 1.5 gram sample, accurately weighed. Reflux gently for one-half hour. The difference in the cc. of N/2 HCl required for both titrations multiplied by 0.0751 indicates the weight in grams of Heliotropine taken for assay.

Descriptive Characteristics

Stability:

When stored at temperatures approximating its melting point, the product tends to fuse and discolor.

Acids: Stable to dilute acids at ordinary temperatures.

Alkali: Stable to dilute alkali at ordinary temperatures.

Oxidation: Relatively resistant to oxidations; oxidizes very slowly to piperonylic acid.

Solubility:

Alcohol: soluble in 3 to 4 cc. of 70% alcohol.

Benzyl Benzoate: V.S.

Diethyl Phthalate: V.S.

Fixed Oils: F.S. in most fixed oils.

Glycerine: Insol. (less than 1 part per 100).

Mineral Oil (Carnation white): Sp. Sol.

Propylene Glycol: F.S.

Volatile Oils: F.S. to S. in most volatile oils.

Water: Insol. (less than 1 part per 100).

The figures given are at 25° C. unless otherwise noted. Refative cc. of solvent for 1 gram of Heliotropine.

Very soluble (V.S.): less than 1 cc. of solvent.

Free soluble (F.S.): from 1 to 10 parts of solvent.

Soluble (S): from 10 to 30 parts of solvent.

Sparingly soluble (Sp. Sol.): from 30 to 100 parts of solvent.

Containers

1 oz. to 200 lbs., usually packed in fibreboard or pressboard containers and wooden barrels.

Storage

Preserve Heliotropine in a cool, dry place protected from light.

Specifications and Standards for Copaiba Oil

Other General Names

Copaiva oil.
Copaiva Balsam oil.

Preparation

Obtained by distillation of Copaiba Balsam.

Physical and Chemical Constants

The oil is colorless, yellowish liquid having the characteristic odor of Balsam Copaiba and an aromatic, slightly bitter and pungent taste.

Specific Gravity @ 15° C.: 0.886 to 0.912.

Optical Rotation: -2° to -33°.

Refractive Index @ 20° C.: 1.4930 to 1.5000.

Gurjun Oil Test:

Add 5 to 6 drops of sample to 10 cc glacial acetic acid containing 5 drops of nitric acid. When gurjun oil is present a purple violet color develops within two (2) minutes.

Descriptive Characteristics

Stability:

Alkali: Fairly stable.
Acid: Fairly stable.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Propylene Glycol: Practically insoluble.

Glycerine: Insoluble.

Alcohol: Usually soluble in an equal volume of absolute alcohol, but requires from 5 to 10 volumes of 95% alcohol for complete solution.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for Oil Citronella Ceylon

Botanical Nomenclature

Andropogon Nardus Ceylon, de Jong.
Cymbopogon Nardus Rendle, lena batu.
Family: Gramineae.

Preparation

Direct steam distillation of the dried grass.

Physical and Chemical Constants

Color and appearance—Yellow to yellowish brown liquid.

Specific Gravity @ 15° C.: —0.898 to 0.910.

Optical Rotation: -9° to -18°.

Refractive Index @ 20° C.: —1.4790 to 1.4850.

Solubility in Alcohol—Clearly soluble at some dilution between 1 and 2 volumes of 80% alcohol. When diluted to 10 volumes, the solution should remain clear or become not more than slightly opalescent with no separation of oil after standing overnight.

Mineral Oil (saturated hydrocarbons)—Negative.

Place 20 cc of fuming sulphuric acid, containing 15% free SO₃, in a graduated, narrow neck Babcock bottle, 50 cc capacity, cool in ice bath 10 minutes, keep bottle in ice bath and add 5 cc of Oil Citronella Ceylon dropwise at such a rate that the bottle remains cold. Incline the bottle and rotate continuously during the addition, which should require about 5 minutes. When no further reaction is apparent remove from ice bath, bringing slowly to room temperature with frequent cautious shaking. Wash down neck with 3 or 4 cc of fuming sulphuric acid.

When no further reaction is apparent on shaking, shake vigorously for 30 seconds. Place bottle in water bath and heat slowly to 60° C. with frequent agitation. (Caution is required, as escaping gas may force some solution from bottle.) Heat at 60°-65° C. for 15 minutes, shaking the contents carefully but vigorously 8-10 times during this period. Remove from bath and without cooling, carefully add sulphuric acid (Specific gravity about 1.84) until the bottle is about three-fourths full. Shake well. No material should adhere to stem and sides at this point; cool to room temperature, add sulphuric acid (Specific gravity about 1.84) until the level is about two-thirds up in neck of flask. Centrifuge 10 minutes at 1,200 revolutions per minute or stand over night and read, centrifuge an additional 10 minutes. Pure Oil Citronella Ceylon should have no readable separation.

Aldehyde Content

7% to 15% calculated as Citronellal.

Proceed as directed in the hydroxylamine method for aldehydes (see Determinations E.O.A. No. 1D), using approximately 5 grams of the oil, accurately weighed. The difference in the cc of N/2 HCl required for both titrations, multiplied by 0.0712, indicates the weight in grams of Citronellal in the sample taken for assay.

Total Alcohols

55% to 65% (calculated as Geraniol).

Proceed as directed for the determination of total alcohols (see Determinations E.O.A. No. 1B). Observe the following modifications: 1. Use two (2) grams of anhydrous sodium acetate; 2. Immerse the acetylation flask in an oil bath to the level of the liquid in the flask; continue the acetylation for two (2) hours, keeping the bath between 155°-160° C.

Use approximately two (2) grams of

the dried acetylated oil, accurately weighed, for the subsequent saponification. Calculate the per cent of Geraniol by the following formula:

Per cent of total alcohols, calculated as Geraniol, in the oil tested =

$$A \times 7.712$$

$$\frac{B - (A \times 0.021)}{A}$$

A is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken. B is the weight of acetylated oil taken.

Descriptive Characteristics

Stability:

Alkali: Relatively unstable in the presence of alkali.

Acids: Unstable, esterification takes place in the presence of some organic acids. Many strong inorganic acids cause decomposition.

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Fixed Oil: Soluble in all proportions in most fixed oils.

Glycerine: Practically insoluble.

Mineral Oil: Usually forms cloudy solutions.

Propylene Glycol: Soluble usually with opalescence or turbidity.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized or clean black iron containers are suitable when long storage is not contemplated.

Storage

Store preferably in tight, full containers in a cool place protected from light.

Specifications and Standards for Citronella Oil—Java Type

Other General Names

The oil of commerce is generally characterized by the geographic origin, e.g., Java, Guatemala, Formosa, etc., and differs from the Ceylon oil in both composition and odor.

Botanical Nomenclature

Andropogon Nardus (L), Cymbopogon Nardus (Rendle).

Family: Gramineæ.

The grass used for production of the Java type oil is referred to as the "maha pengri" type, as distinguished from the "Jena batu," which is used for the production of the Ceylon type oil.

Preparation

By direct steam distillation of the freshly cut or partially dried grasses.

Physical and Chemical Constants

Color and appearance—The Java type Citronella Oil is characterized by a light yellow to tan color, low viscosity, and pronounced aldehydic odor.

Specific Gravity 15°/15° C.: 0.883 to 0.900.

Optical Rotation: -0° 30' to -6°.

Refractive Index @ 20° C.: 1.4660 to 1.4745.

Total Aldehydes as Citronellal: 30% to 45%.

The aldehyde content of individual drums may show a wide variation; however, bulk shipments are generally required to meet an average minimum citronellal content of 35%.

Total Alcohols as Geraniol: 85% to 97%.

Solubility:

Clearly soluble at all dilutions between 1 and 2 volumes of 80% alcohol and may become opalescent on further dilution.

Assay:

Total Aldehydes as Citronellal:

Proceed as directed in the hydroxylamine method for aldehydes (see Determinations E.O.A. No. 1D), using approximately 2.5 grams of sample, accurately weighed. The difference in the cc of N/2 HCl required for both titrations multiplied by 0.07712 indicates the weight in grams of total aldehydes calculated as citronellal in the sample taken.

Assay:

Total Alcohols as Geraniol:

Proceed as directed for the determination of total alcohols (see Determination E.O.A. No. 1B), with the following modifications:

1. Use 2 grams of anhydrous sodium acetate for acetylation.
2. Reflux the resulting acetylation mixture for two hours.

Calculate the percentage of total alcohols as geraniol, employing the following formula:

$$\frac{A \times 7.712}{B - (A \times 0.021)}$$

A is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

B is the weight of acetylated oil taken.

Descriptive Characteristics

Stability:

Alkali: Moderately stable to weak alkali at normal temperatures. Unstable in the presence of concentrated alkali at elevated temperatures.

Acids: Decomposes in the presence of mineral acids. Moderately stable to weak organic acids.

Solubility:

Soluble in all proportions with Benzyl Benzoate, Diethyl Phthalate and most fixed oils.

Soluble with cloudiness in mineral oil and Propylene Glycol.

Insoluble in Glycerine.

Containers

Should be shipped preferably in glass, tin-lined or aluminum containers. Good quality galvanized or black iron containers are suitable provided long storage is not contemplated.

Storage

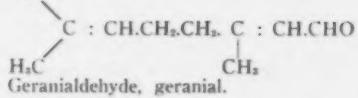
Store in tight, full containers in a cool place protected from light.

Specifications and Standards for Citral Pure

C₁₀H₁₆O

Probably
H₃C

Mol. Wt. 152.12



Preparation

Obtained by reaction with Sodium Sulphite or Bisulphite with further purification by distillation and chemical processes, or can also be prepared by the oxidation of the alcohols such as geraniol, nerol and linalool by means of chromic acid or other oxidizing substances.

Physical and Chemical Constants

Color and appearance—A mobile, pale yellow liquid having a strong lemon odor.

Specific Gravity @ 15° C.: 0.891 to 0.897.

Optical Rotation: Inactive.

Refractive Index @ 20° C.: 1.4860 to 1.4900.

Mineral Oil: All proportions.

Propylene Glycol: All proportions.

Stability

Alkali: Not stable.

Acids: Not stable.

Containers

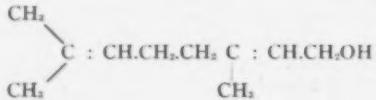
Citral should preferably be shipped in glass. Good grade tins may be used if long storage is not contemplated.

Storage

Store preferably in tight full containers in a cool place protected from light.

Specifications and Standards for Geraniol

C₁₀H₁₈OH



Mol. Wt. 154.24

Preparation

Obtained from such essential oils as Citronella Java and Palmarosa Oil, and other essential oils.

Physical and Chemical Constants

Color and Appearance—Colorless liquid, having a rose-like odor.

Specific Gravity 15° C.: .870 to .890.

Optical Rotation: -2° to +2°.

Refractive Index @ 20° C.: 1.4710 to 1.4780.

Solubility in Alcohol—Soluble in two and more volumes of 70% alcohol.

Total Alcohol Content—Not less than 88% calculated as C₁₀H₁₈OH.

Method: Proceed as directed for the determination of total alcohols (See Determinations E.O.A. 1B), using approximately 1.2 gms of acetylated oil, accurately weighed for the saponification. Calculate the percentage of total alcohols as geraniol, using the following formula:

$$\frac{A \times 7.712}{B - (A \times .021)}$$

"A" is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

"B" is the weight of acetylated oil.

Ester Content—Not more than 1% calculated as Geranyl Acetate.

Method: Proceed as directed for the de-

termination of esters (See Determinations E.O.A. 1A), using approximately 5 gms. of sample accurately weighed. The number of cc of half normal alcoholic potassium hydroxide consumed in the saponification, multiplied by .0981, indicates the gms. of ester calculated as geranyl acetate.

Aldehyde Content—Not more than 1% calculated as Citronella.

Method: Proceed as directed in the Hydroxylamine Method for aldehydes (See Determinations E.O.A. 1D), using approximately 5 gms. of sample accurately weighed and allow the test to stand for 15 minutes at room temperature. The difference in the number of cc required for the titration of the blank and the sample multiplied by .07712 indicates the number of grams of aldehyde calculated as citronella.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Insoluble.

Propylene Glycol: Soluble in all proportions.

Stability:

Acids: Not stable.

Alkali: Fairly stable at moderate temperatures.

Containers

Should be shipped preferably in glass or tin-lined containers. Good quality galvanized containers are suitable provided long storage is not contemplated.

Storage

Store in tight, full containers in a cool place, protected from light.

Specifications and Standards for Geranyl Acetate

C₁₀H₁₂O₂C₂H₅ Mol. Wt. 196.28

Preparation

Obtained from Geraniol by acetylation.

Physical and Chemical Constants

Color and Appearance—Colorless liquid having a pleasant flowery odor.

Specific Gravity @ 15° C.: 0.907 to 0.918.

Optical Rotation: -2° to +2°.

Refractive Index @ 20° C.: 1.4580 to 1.4640.

Ester Content: Not less than 90%.

Proceed as directed for the determination of esters (See E.O.A. 1A), using approximately 1.0 gram of sample accurately weighed. The number of cc of half normal potassium hydroxide solution consumed in the saponification, multiplied by 0.0981, indicates the number of grams of ester calculated as Geranyl Acetate in the sample taken for assay.

Solubility in Alcohol—Soluble in 8 volumes of 70% alcohol.

Descriptive Characteristics

Solubility:

Benzyl Benzoate: Soluble in all proportions.

Diethyl Phthalate: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Insoluble.

Mineral Oil: Soluble in all proportions.

Propylene Glycol: Not completely soluble in all proportions.

Stability:

Acids: Fairly stable to weak organic acids.

Alkali: Unstable to alkalies, due to saponification of the ester with subsequent liberation of free geraniol.

Containers

Geranyl Acetate should be shipped in glass, aluminum, tin-lined or good quality galvanized iron containers.

Storage

Store preferably in tight, full containers in a cool place, protected from light.

Specifications and Standards for Citronellol

Preparation

Reduction of citronellal or geraniol or obtained from essential oils such as geranium and citronella, etc.

Physical and Chemical Constants

Color and Appearance—Colorless liquid having a roselike odor.

Specific Gravity 15° C.: .849 to .868.

Optical Rotation: -3° to +3°.

Refractive Index @ 20° C.: 1.4460 to 1.4600.

Solubility in Alcohol—Soluble in two and more volumes of 70% alcohol.

Total Alcohol Content—Not less than 90% calculated as C₉H₁₈OH.

Method: Proceed as directed for the determination of total alcohols (See Determinations E.O.A. 1B), using approximately 1.2 gms. of the acetylated oil accurately weighed for the saponification. Calculate the percentage of total alcohols as citronellol, using the following formula:

$$A \times 7.813$$

Total Alcohols = $B - (A \times .021)$

"A" is the result obtained by subtracting the number of cc of half normal hydrochloric acid required in the titration from the number of cc of half normal alcoholic potassium hydroxide originally taken.

"B" is the weight of acetylated oil.

Ester Content—Not more than 1% calculated as citronellyl acetate.

Method: Proceed as directed for the determination of esters (See Determinations E.O.A. 1A), using approximately 5 gms. of sample accurately weighed. The number of cc of half normal alcoholic potassium hydroxide consumed in the saponification, multiplied by .0991, indicates the gms. of ester calculated as citronellyl acetate.

Aldehyde Content—Not more than 1% calculated as Citronella.

Method: Proceed as directed in the Hydroxylamine Method for aldehydes (See Determinations E.O.A. 1D), using approximately 5 gms. of sample accurately weighed and allow the test to stand for 15 minutes at room temperature. The difference in the number of cc required for

the titration of the blank and the sample multiplied by .07712 indicates the number of gms. of aldehyde calculated as citronella.

Descriptive Characteristics

Solubility:

Diethyl Phthalate: Soluble in all proportions.

Benzyl Benzoate: Soluble in all proportions.

Mineral Oil: Soluble in all proportions.

Fixed Oils: Soluble in all proportions.

Glycerine: Insoluble.

Propylene Glycol: Soluble in all proportions.

Stability:

Acids: Fairly stable to dilute acids.

Alkali: Fairly stable.

Containers

Should be shipped preferably in glass or tin-lined containers. Good quality galvanized or black iron containers are suitable provided long storage is not contemplated.

Storage

Store in tight, full containers in a cool place, protected from light.

DEFINITIONS . . .

(From Page 175)

treated in such a way that no growths can be produced from it by appropriate culture, then—and then only—has it been completely sterilized.

One of the best ways to accomplish sterilization is maintaining for a sufficient time at a temperature at which microorganisms cannot live; hence the use of the word *sterilize* suggests to some the destruction of microorganisms by *heating*. To others it includes also the notion of the use of strong chemical agents. The word calls to mind the treatment of surgeons' instruments, gauze bandages, culture dishes, and other apparatus rather than the treatment of the sick room or of the human body.

Disinfectant and Sterilize—It has been noted that *disinfectant* refers particularly to the destruction of disease germs (especially the vegetative forms), while *sterilize* denotes the freeing from all organic life. Hence *sterilize* is the more drastic of the two terms and it might easily happen that something is thoroughly disinfected without being completely sterilized. This is true, for example, of the customary treatment of milk cans, milk bottles, etc., in the dairy industry, where treatment sufficient to prevent diseases and spoiling of the milk is not necessarily sterilization.

DEODORANT, -RIZER

Definition—

deodorant, deodorizer, n. Anything that destroys or masks offensive odors.

Comments—A deodorant may or may not be an antiseptic or disinfectant. The popular notion that danger from infection disappears with the removal of disagreeable odor is of course a mistaken one.

INSECTICIDE, -DAL

Definition—

insecticide, n. A substance that destroys

insects, especially a preparation used for this purpose.

insecticidal, adj. Of or pertaining to insecticides; destroying insects.

Comments—As defined, the word *insecticide* is limited to the destruction of insects. The Insecticide Act of 1910 defines it somewhat more broadly, however, as "any substance or mixture of substances intended to be used for preventing, destroying, repelling, or mitigating any insects." Also, the Food and Drug Administration admits within the term *insect* small invertebrate animals such as spiders and mites which do not belong to the order Insecta but are liable to be called insects in popular language. Insecticides may be effective against one type of insect but not necessarily against all types of insects. Insecticides usually act as stomachic or respiratory poisons; their method of application or use varies with the type of the insecticide and of the insect against which it is applied. An insecticide although usually used to destroy insects does not necessarily give a 100 per cent kill.

DISINFEST

Definition—

disinfest, v.t. To rid of infestation; to free from infesting insects, rodents or other small animals.

Comments—The earliest appearance of the word of which the committee has record is in the report of the Committee on Standard Regulations for the Control of Communicable Diseases, A. P. H. A., 1926, in which the following definition appears: "By disinfecting is meant any process, such as the use of dry or moist heat, gaseous agents, poisoned food, trapping, etc., by which insects and animals known to be capable of conveying or transmitting infection may be destroyed."

Since a word covering the above process was apparently needed, and since the inclusion of this sense in the meaning of *disinfect* (as has been the practice of some) seems incorrect and undesirable, the introduction and use of the comparatively new word *disinfest* are to be commended.

PROPHYLACTIC

Definitions—

prophylactic, n. Anything that prevents, or that contributes to the prevention of disease; a preventive.

prophylactic, adj. Guarding from disease; preventing, or contributing to the prevention of, disease.

Comments—The meaning of prophylactic is wide. It applies to anything which even helps to ward off disease, as fresh air, nutritious diet, and rest, which serve as preventives of tuberculosis and other ailments. One writer has even used the term "mental prophylactics." Various medicinal preparations are also called prophylactics. It would seem however that a substance, to be called a prophylactic

against a given disease should be demonstrated to have some efficacy for the purpose in question under the conditions of its intended use.

CONCLUSIONS

It has been announced as a principle of legal practice that "language used in the label is to be given the meaning ordinarily conveyed by it to those to whom it is addressed." This commands itself as a sound and wise ruling, for the general public cannot be expected to be acquainted with special technical meanings or to have information proper to experts alone. Nevertheless, it is possible to draw wrong conclusions from this principle. People constantly make use of words of which they do not know the accurate meaning. They know barely enough about it for ordinary purposes; the rest they leave to the specialist. This is eminently true of such things as drugs and medicaments. It is small wonder that similar terms are sometimes confused in the popular mind.

It may of course happen in the development of language that a term becomes so confused that it undergoes a complete change of meaning and that the new meaning becomes commonly accepted. But the mere fact that the average person has a confused notion of a word which is used correctly by writers and careful speakers does not justify acceptance of the confused meaning.

The terms *antiseptic* and *disinfectant* may be taken as examples. There appears to be some haziness in the mind of the public regarding their signification; yet the greater part of the literature is in fair agreement as to the derivation, history, and present meaning of the two words. Moreover, what popular confusion may exist is not so much with respect to the *root idea* of the words ("antiseptic," opposing decomposition; "disinfectant," ridding of infection) as regarding the mechanism by which the result is effected (removing germs, killing germs, or preventing the growth of germs). It is the result that chiefly concerns the public; the expert must be relied on for exact knowledge of the mechanism.

So far as the writer can determine after talking with various persons, bacteriologists, physicians, druggists, manufacturers of chemicals, and government officials, there do not seem to be serious differences of opinion among professional men as to the meanings of the various terms now under discussion.

In so far as differences exist, they seem to relate rather to the question as to what is a fair use of the terms in connection with certain manufactured products, when the circumstances under which these products are to be used are duly considered. For example, there seems to be pretty general agreement that the term *antiseptic* (at least aside from surgery) may properly be applied to a substance which merely arrests the growth of microorganisms without killing them. There is apparently no question, for example, as to advertising a bandage impregnated with iodoform as an antiseptic dressing for wounds or as to calling iodoform or any similar agent an antiseptic when so used. The question seems to be whether a substance which is not a germicide but which acts as an antiseptic so long as it remains in contact with the area to be protected can fairly be called an antiseptic when its application is necessarily brief as in the case of a mouth wash, gargle or tooth paste. Again, the agreement on the meaning of the term *prophylactic* seems to be good. It is recognized as a very broad term. Apparently the main question at issue, if there is one, is under what circumstances a given substance may fairly be claimed to have a prophylactic effect.

The adjustment of such questions as to what is fair under different circumstances seems to lie outside the province of defining meanings of words. It seems to be a matter of bacteriological and medical knowledge, a spirit of fair play, and good common sense. If the writer may hazard a suggestion, it would be that, since the correct application of certain terms of which *antiseptic* and *disinfectant* may serve as types depends on a number of factors (in the

(Turn to Page 230)

Floor Wax Specification

Official Specification and Standard Test Method of The
National Assn. of Insecticide and Disinfectant Mfgs.

A SPECIFICATION and standard method of testing for water emulsion floor waxes was adopted by the National Association of Insecticide & Disinfectant Manufacturers at a meeting in Cleveland, June, 1943. Specification and method follows:

SPECIFICATION FOR WATER-DISPERSION FLOOR WAX

Applicable to Waxes of from
10 to 15% Total Solids

A. General Requirements

1. The material shall be suitable for application to all sealed floors and floor coverings in general.

2. The material shall be a stable aqueous colloidal dispersion of waxes and other suitable substances. The composition and properties of the material shall be such that it will meet all of the provisions of the detailed requirements, when tested by the NAIDM test methods.

3. When applied in accordance with the manufacturer's direction, the material shall dry to a lustrous finish without polishing.

B. Detailed Requirements

1. Sediment. The material shall be a fluid dispersion containing not over 4 per cent sediment, the percentage being calculated on the basis of total solids.

2. Stability. The material shall show no gelling or creaming when kept in closed containers at 52° C. (125° F.) for 168 hours (7 days).

3. Application. The material is to be applied as a thin, uniform film to clean dry flooring surfaces.

4. Color and Transparency. A thin, dried film of the material, prepared by flowing onto a clear glass plate and drying in air at 25° C. (77° F.), shall be substantially transparent and practically colorless, as viewed by transmitted bright daylight.

5. Leveling and Spreading. The material, when applied as a thin, uniform film on new linoleum shall dry without streaking.

6. Lustre or Gloss. The dried film shall increase the gloss of new linoleum not less than 10 per cent, as measured by a light reflectance meter.

7. Alkalinity. The material shall not have a pH greater than 10.0 nor less than 4.0.

8. Surface Tension. The material shall have a surface tension not

greater than 33 dynes per centimeter at 25° C. (77° F.).

9. Flexibility of Film. The dried film shall be sufficiently flexible so that no cracking will occur when a 2 coat application, on new linoleum, dried 48 hours at 25° C. (77° F.) and 50 per cent relative humidity is bent, through 180° around a 2 inch diameter mandrel.

10. Abrasion Resistance. The dried film shall have an abrasion index (Taber cycles divided by weight of film in mgs. per sq. cm.) of not less than 100 when tested on glass plates using a Taber Abraser (Model J or equivalent) with Taber CS-10 Calibrase wheels.

11. Tackiness and Slipperiness. The dried film shall be neither soft and sticky nor excessively slippery.

12. Water Resistance. The dried film on a specified surface, after 48 hours at 25° C. (77° F.) and 50 per cent relative humidity shall be resistant to cold water. The film shall not be permanently whitened or damaged by contact with water for one hour at 25° C. (77° F.). The film shall not be removed by damp mopping with a soft rag using clear water at 25° C. (77° F.).

13. Removal of Film. A film dried for 48 hours at 25° C. (77° F.) and 50 per cent relative humidity, on new linoleum, shall be easily removable by moderate scrubbing with a soft bristle brush, using an aqueous detergent solution, containing 0.25 per cent tallow soap chips and 0.25 per cent aqua ammonia (28 per cent NH₃) at a temperature of 50° C. (122° F.).

N.A.I.D.M. PROPOSED STANDARD METHODS FOR TESTING WATER-DISPERSION FLOOR WAX

Purpose

The purpose of compiling a more or less complete set of methods for testing water-dispersion floor wax is to make available to the manufacturer, user or other interested persons suitable procedures which have proven to be best adapted for the purpose intended. It is the further purpose to limit the methods more or less to tests designed to evaluate performance properties rather than to determine composition data. There is a need for such standard methods because even on such a simple test as total solid content, there is a possibility of widely divergent results unless great attention is paid to small details. At present there are no methods accepted as standard by any association or group except as such methods may be part of a specification. Standard methods of testing will make

it possible to eliminate controversies which are now inevitable.

Methods of Testing

1. Sediment. Mix the original sample well and pour a 100 cc. portion into a graduated A.S.T.M. water and sediment tube. Centrifuge for 15 minutes at approximately 2,000 r.p.m. Read directly volume of sediment in mls.

2. Stability. Measure viscosity of original sample at 25° C. (77° F.) using Oswald type pipet viscosimeter. Pour 100 ml. of the original sample into a 4 oz. bottle approximately 35 mm. inside diameter. Close the bottle securely with a clean cork and allow it to stand undisturbed in an upright position at 52° C. (125° F.) for 168 hours. At the end of this time, cool to room temperature, measure viscosity as before and observe for any creaming, separation or gelling.

3. Total Solids. Use a porcelain capsule crucible approximately 5 cm. in diameter and 1 cm. deep for the determination. Heat the capsule to dull red heat, cool in a desiccator, and weigh to the nearest tenth of a milligram. Place in the capsule a sample of from 2 to 3 grams accurately weighed to the nearest milligram, taking suitable precautions to avoid error due to loss of weight by evaporation during transfer and weighing of the sample. Heat the capsule containing the sample on a steam bath for 1 hour, then transfer it to a drying oven and heat for 3 hours at 105° to 110° C. (221° to 230° F.). Cool the capsule in a desiccator and weigh to the nearest tenth of a milligram. Multiply the weight of non-volatile matter by 100 and divide by the weight of the sample to obtain the percentage of non-volatile matter.

4. pH Value. Determine the pH of the sample at 25° C. (77° F.) using a glass electrode pH meter without application of correction for sodium or potassium ion concentration.

5. Surface Tension. The surface tension of the sample at 25° C. (77° F.) may be determined by one of the reliable, established methods for this determination. The ring detachment method is preferred for this test on water-dispersion waxes. Instruments suitable for determination of the surface tension of water-dispersion floor waxes include the Cenco-du Nouy Tensiometers described in Bulletin 101 of the Central Scientific Company.

6. Leveling and Spreading. Test panels, 3 x 6 inches, of new brown linoleum of good quality and either $\frac{1}{8}$ or $\frac{1}{4}$ inch in thickness shall be used. Before applying the water-dispersion wax to these test panels, thoroughly re-

move any wax coating. Usually this can be done by soaking for five minutes at 50° C. (122° F.) in an aqueous solution containing 0.25 per cent by weight of 88-92 per cent tallow chip soap and 0.25 per cent by weight of 28 per cent aqua ammonia, scrubbing the top surface of the test panels gently with a soft bristle brush or cloth saturated with the above detergent solution at 40°-50° C. (104°-122° F.), rinsing the test panels thoroughly with water at 40°-50° C., draining and wiping the top surface dry with soft clean cloths.

Apply some of the sample to one of the cleaned linoleum test panels, using a small, clean mohair applicator just saturated with the sample, and applying it with light, uniform, overlapping parallel strokes. Note leveling and spreading properties from appearance of dried film.

Place coated linoleum specimen in desiccator or chamber in which humidity is controlled at 50 per cent relative humidity (see Note 1) at a temperature of 25° C. (77° F.) for 48 hours. Then apply a second coat of sample using same technic as above. Note any re-emulsification on applying second coat and leveling and spreading properties from appearance of dried film.

If flexibility of film is required, test can be carried out on same test panel.

7. Drying Time. Flow a uniform film of the sample over the surface of a clear glass plate which has been cleaned by immersion in chromic acid cleaning solution followed by thorough rinsing with clear water. Incline the test plate at an angle of 45° to the horizontal and allow it to drain and dry in this position in air maintained at a temperature of 25° C. (77° F.) and 50 per cent relative humidity. Observe time required for film to become dry to touch at a point 15 mm. above lower horizontal edge. Express drying time as period required to nearest minute. If transparency of film is required, observation can be made on this same test panel.

8. Gloss or Lustre. Use a gloss meter consisting of a light source, of constant intensity, directing a substantially parallel beam at the surface to be tested at an angle of incidence of 45°; a photocell, with a spectral-response curve approximating the ICI standard luminosity curve, placed to intercept the reflected beam at an angle of reflection of -45°; a sensitive galvanometer for measuring the e.m.f. generated by the photocell. A meter of this description is supplied by Pfaltz & Bauer, Inc., New York City. Calibrate the gloss meter by placing it on an optical flat, made of glass with an index of refraction of $nD = 1.5172$, 8 mm. thick, with a fine ground back resting on a non-reflecting black surface. Check the instrument before and after all readings on test panels.

Select a test panel of new brown linoleum from which all wax has been thoroughly removed and record the

gloss of the test panel. Flow a uniform film of the sample onto this test panel, drain and dry at an angle of 45° in air at a temperature of 25° C. (77° F.) and 50 per cent relative humidity for a period of 24 hours, then measure the gloss of the dried film on the test panel with the calibrated gloss meter. Subtract the gloss reading of the test panel from the gloss reading of the dried film on the test panel, multiply the difference by 100, and divide by gloss reading of the test panel to give the percentage increase in gloss.

As an alternative method particularly intended for control testing, it is proposed that a standard test solution consisting of ammonia-water-shel-lac or sugar in water be developed so that such solution when applied to a linoleum surface will produce a gloss equivalent to an increase of 100 per cent as determined by the gloss meter.

9. Transparency of Film. Clean a piece of clear plate glass using chromic acid cleaning solution and rinse thoroughly. Flow a uniform film of the sample onto one surface of this glass, and allow it to drain and dry at an angle of 45° in air at a temperature of 25° C. (77° F.) and 50 per cent relative humidity. Observe the dried film from the under side of the glass plate by transmitted bright daylight.

10. Flexibility of Film. Prepare linoleum test panel with 2 coats of sample exactly as described under Leveling and Spreading. Alternately the same test panel may be used for both tests. Determine the flexibility of the film at 25° C. (77° F.) and 50 per cent relative humidity by bending the test panel, with the treated surface on the outside, around a mandrel 2 inches in diameter, through an arc of 180°. Observe the film for any cracking or chipping.

11. Abrasion Resistance. Prepare three discs of $\frac{1}{8}$ " thick, clear plate glass, each 4" in diameter with a $\frac{1}{4}$ " diameter hole in the center. Clean the discs by the method specified for linoleum test panels. By means of two glass cylinders, one 2" in diameter and one $3\frac{1}{2}$ " in diameter, with lower ends ground exactly at right angles to their axes, and dipped into melted paraffin, apply two rings of paraffin to the upper surface of each disc, concentric with the center hole, being careful to avoid contaminating the cleaned glass surface between the two rings. Determine the area of the glass surface between the two paraffin rings in sq. cm. by actual measurement with an accuracy of ± 2 per cent. Mark each glass disc for identification, and weigh each accurately in air at 25° C. (77° F.) and 50 per cent relative humidity. Coat the surface between the two paraffin rings on each disc with a thin uniform film of the original sample by applying between 0.5 and 1.0 ml. of the original sample of water-dispersion wax from a 1 ml. pipette and spreading it uniformly over the entire surface between the paraffin rings with the tip of the pipette. Dry the coated discs in a horizontal position in air at 25° C. (77° F.) and 50 per cent relative hu-

midity for 24 hours, and weigh the discs again accurately under these conditions. Subtract the original weight and divide the difference in milligrams by the area of the wax film in sq. cm. to give the weight of coating in mg. per sq. cm. Abrade the coating on each disc, at 25° C. (77° F.) and 50 per cent relative humidity, on a Taber Abraser, Model J, using Taber CS-10 Calibrase wheels, until the coating has been worn away from approximately 50 per cent of the area of the abrasion track. Clean the wheels by ten cycles on the carbon-drum paper cleaning discs after each 100 cycles on the wax surface. Subtract the total number of cleaning cycles from the total number of cleaning and abrading cycles. Divide the number of abrasion cycles required for each disc by the weight of the dried coating in mg. per sq. cm. on that disc to give the wear resistance index.

12. Tackiness and Slipperiness. No satisfactory method has yet been developed.

13. Water Resistance. Prepare a test panel on cleaned new linoleum in the manner described under Leveling and Spreading. Place a large drop of distilled water, 1 to 2 cm. in diameter on the treated surface of the test panel. Allow to stand undisturbed for one hour in air at 25° C. (77° F.) and 50 per cent relative humidity. Shake off any remaining water. Observe whether the wax film is damaged or appreciably whitened by the water. Note whether any visible spotting of the film disappears on drying for $\frac{1}{2}$ hour at 25° C. (77° F.) and 50 per cent relative humidity.

14. Resistance to Damp Mopping. Wet a clean soft cloth with clear water at 25° C. (77° F.). Wipe the entire treated surface of the test panel used in the Water Resistance test with this wet cloth, exerting moderate pressure and wiping five times at intervals of 2 seconds. Then wipe the test panel dry with a clean, soft, dry cloth. Observe whether the wax film is removed by this process.

15. Removability. Prepare a test panel on cleaned new linoleum in the same manner described under Leveling and Spreading. After aging panel for 48 hours, immerse it in detergent solution same as specified under Leveling and Spreading, for 5 minutes at a temperature of 50° C. (122° F.). Then, with a test panel still immersed, scrub its treated surface moderately with a soft bristle brush, making at least 10 strokes of the brush with moderate hand pressure across each portion of the treated surface. Remove the test panel from the detergent solution, rinse it thoroughly with clear water at 40°-50° C. (104°-122° F.), and wipe dry with a soft, clean cloth. Observe the panel for completeness of removal of wax film after drying.

Note 1. A saturated solution of calcium nitrate ($Ca(NO_3)_2 \cdot 4H_2O$) at 25° C. (77° F.) gives 50 per cent relative humidity.

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DEFINITIONS

(From Page 214)

present case, strength, time of contact, type of organism, etc.), due regard should always be had to these factors as they occur, or are likely to occur, in actual practice.

INSECTICIDE ACT

(From Page 173)

effect that the article was lawfully registered at the time of sale and delivery to him, and that it complies with the other requirements of this Act, designating this Act. In such case the guarantor shall be subject to the penalties which would otherwise attach to the person holding the guarantee under the provisions of this Act;

(2) any carrier while lawfully engaged in transporting an economic poison or device if such carrier upon request by a person duly designated by the Secretary shall permit such person to copy all records showing the transactions in and movement of the articles;

(3) to public officials while engaged in the performance of their official duties;

(4) to the manufacturer or shipper of an economic poison for experimental use only by or under the supervision of any Federal or State agency authorized by law to conduct research in the field of economic poisons; or by others if a permit has been obtained before shipment in accordance with regulations promulgated by the Secretary.

PENALTIES

SEC. 8. a. Any person violating section 3a (1) of this Act shall be guilty of a misdemeanor and shall on conviction be fined not more than \$1,000.

b. Any person violating any provision other than section 3a (1) of this Act shall be guilty of a misdemeanor and shall upon conviction be fined not more than \$500 for the first offense, and on conviction for each subsequent offense be fined not more than \$1,000 or imprisoned for not more than one year, or both such fine and imprisonment: *Provided*, That an offense committed more than five years after the last previous conviction shall be considered a first offense: *And provided further*, That in any case where a registrant was issued a warning by the Secretary pursuant to the provisions of section 4c of this Act, he shall in each instance upon conviction for an offense concerning which he had been

so warned, be fined not more than \$1,000 or imprisoned for not more than one year, or both such fine and imprisonment; and the registration of the article with reference to which the violation occurred shall terminate automatically. An article the registration of which has been terminated may not again be registered unless the article, its labeling, and other material required to be submitted appear to the Secretary to comply with all the requirements of this Act.

c. Notwithstanding any other provision of this section, in case any person, with intent to defraud, uses or reveals information relative to formulas of products acquired under the authority of section 4 of this Act, he shall be fined not more than \$10,000 or imprisoned for not more than three years, or both such fine and imprisonment.

d. When construing and enforcing the provisions of this Act, the act, omission, or failure, of any officer, agent, or other person acting for or employed by any person shall in every case be also deemed to be the act, omission, or failure of such persons as well as that of the person employed.

SEIZURES

SEC. 9. a. Any economic poison or device that is being transported from one State, Territory, or District to another, or having been transported, remains unsold or in original unbroken packages, or that is sold or offered for sale in the District of Columbia or any Territory, or that is imported from a foreign country, shall be liable to be proceeded against in any district court of the United States in the district where it is found and seized for confiscation by a process of libel for condemnation—

(1) in the case of an economic poison—

(a) if it is adulterated or misbranded;

(b) if it has not been registered pursuant to the provisions of section 4 of this Act;

(c) if it fails to bear on its label the information required by this Act; or

(d) if it is a white powder economic poison and is not colored as required under this Act; or

(2) in the case of a device if it is misbranded,

b. If the article is condemned it shall, after entry of the decree, be disposed of by destruction or sale as the court may direct and the proceeds, if sold, less the legal costs, shall be paid into the Treasury of the United States, but the article shall not be sold contrary to the provisions of this Act or of the laws of the jurisdiction in which it is sold: *Provided*, That upon the payment of the costs of the libel proceedings and the execution and delivery of a good and sufficient bond conditioned that the article shall not be sold or otherwise disposed of contrary to

the provisions of this Act or the laws of any State, Territory, or District in which sold, the court may direct that such articles be delivered to the owner thereof. The proceedings of such libel cases shall conform, as near as may be, to the proceedings in admiralty, except that either party may demand trial by jury of any issue of fact joined in any case, and all such proceedings shall be at the suit of and in the name of the United States.

c. When a decree of condemnation is entered against the article, court costs and fees, storage, and other proper expenses shall be awarded against the person, if any, intervening as claimant of the article.

IMPORTS

SEC. 10. The Secretary of the Treasury shall notify the Secretary of Agriculture of the arrival of economic poisons and devices offered for importation and shall deliver to the Secretary of Agriculture, upon his request, samples of economic poisons or devices which are being imported or offered for import into the United States, giving notice to the owner or consignee, who may appear before the Secretary of Agriculture and have the right to introduce testimony. If it appears from the examination of a sample that it is adulterated, or misbranded or otherwise violates the prohibitions set forth in this Act, or is otherwise dangerous to the health of the people of the United States, or is of a kind forbidden entry into or forbidden to be sold or restricted in sale in the country in which it is made or from which it is exported, the said article may be refused admission, and the Secretary of the Treasury shall refuse delivery to the consignee and shall cause the destruction of any goods refused delivery which shall not be exported by the consignee within three months from the date of notice of such refusal under such regulations as the Secretary of the Treasury may prescribe: *Provided*, That the Secretary of the Treasury may deliver to the consignee such goods pending examination and decision in the matter on execution of a penal bond for the amount of the full invoice value of such goods, together with the duty thereon, and on refusal to return such goods for any cause to the custody of the Secretary of the Treasury when demanded, for the purpose of excluding them from the country, or for any other purpose, said consignee shall forfeit the full amount of the bond: *And provided further*, That all charges for storage, cartage, and labor on goods which are refused admission or delivery shall be paid by the owner or consignee, and in default of such payment shall constitute a lien against any future importation made by such owner or consignee.

DELEGATION OF DUTIES

SEC. 11. All authority vested in the Secretary by virtue of the provisions of this Act may with like force and effect be executed by such employees of the United States Department of Agriculture as the Secretary may designate for the purpose.

AUTHORIZATION FOR APPROPRIATIONS
AND EXPENDITURES

SEC. 12. a. There is hereby authorized to be appropriated, out of any moneys in the Treasury not otherwise appropriated, such sums as may be necessary for the purposes and administration of this Act. In order to carry out the provisions of this Act, which take effect prior to the repeal of the Insecticide Act of 1910, appropriations available for the enforcement of such Act are authorized to be made available.

b. The Secretary is authorized from the funds appropriated for this Act to make such expenditures as he deems necessary, including rents, travel, supplies, books, samples, testing devices, furniture, equipment, and such other expenses as may be necessary to the administration of this Act.

COOPERATION

SEC. 13. The Secretary is authorized to cooperate with any other department or agency of the Federal Government and with the official agricultural or other regulatory agency of any State, or any State, Territory, District, possession, or any political subdivision thereof, in carrying out the provisions of this Act, and in securing uniformity of regulations.

SEPARABILITY

SEC. 14. If any provision of this Act is declared unconstitutional, or the applicability thereof to any person or circumstance is held invalid, the constitutionality of the remainder of this Act and the applicability thereof to other persons and circumstances shall not be affected thereby.

EFFECTIVE DATE

SEC. 15. All provisions of this Act, except section 3, "Prohibited Acts"; section 8, "Penalties"; section 9, "Seizures"; and section 10, "Imports," shall take effect upon enactment, and sections 3, 8, 9, and 10 of this Act shall take effect as follows: (1) As to devices, upon enactment; (2) as to rodenticides and herbicides, six months after enactment; and (3) as to insecticides, fungicides, and all other economic poisons, one year after enactment: *Provided*, That the Secretary, upon application, may at any time within one year after sections 3, 8, 9, and 10 of this Act become applicable to devices, rodenticides and herbicides, and insecticides, fungicides, and other economic poisons, respectively, if he determines that such action will not be unduly detrimental to the public interest, and is necessary to avoid hardship, exempt, under such terms and conditions as he may prescribe, any economic poison from the provisions of this Act if such economic poison was labeled, shipped, and delivered by the manufacturer thereof prior to the time the sections of this Act referred to above become applicable to such economic poison and in case the economic poison is an insecticide or fungicide if its sale, delivery, or shipment has not been and will not be in violation of the provisions of the Insecticide Act of 1910.

REPEALS

SEC. The Insecticide Act of 1910, approved April 26, 1910 (36 Stat. 331, 7 U. S. C. 121-134), is hereby repealed one year after the date of the enactment of this Act: *Provided*, That, with respect to violations, liabilities incurred, or appeals taken prior to said date, and with respect to sales, shipments, or deliveries of insecticides and fungicides under an exemption granted by the Secretary under section 15, all provisions of the Insecticide Act of 1910 shall be deemed to remain in full force for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violations, liabilities, appeals, or to such sales, shipments, or deliveries of insecticides and fungicides exempted by the Secretary under section 15.

Approved June 25, 1947.

FAT SALVAGE

(From Page 159)

interchangeability of fats and oils is important to the national economy has been pointed out by Charles E. Lund: "This reclamation of used fats—between 100 and 200 million pounds a year . . . reduces the possible use of lard with its resultant increased demand for vegetable oils to meet foreign and domestic needs."

Government solidly backs the Fat Salvage program, but what of industry who puts up the money—\$7,035,418 for advertising as of the first of this year? The first answer to the question of industry's stake in fat salvage goes back to March, 1942, when the Salvage Division of the War Production Board invited a number of soap manufacturers and renderers to Washington. Vice-Chairman Paul Cabot conducted the meeting and advised that the U. S. was about to suffer an acute shortage of fats and oils. Soon after, the initial fat salvage campaign was launched with heavy advertising and although it was expected to run for only six weeks, it is still going strong and will as long as the world-wide shortage of fats and oils exists.

The cost to industry for the campaign has averaged 83/100ths of a cent per pound from the period of March 1942 through 1947. The 83/100ths of a cent per pound is the premium industry has paid to buy

the additional 864,318,000 pounds of refined kitchen fats from renderers in the open market.

Collection figures fluctuated a good deal in accordance with wartime conditions and continue to do so in the postwar months. There have been four peaks in the fat salvage campaign: these occurred in May, 1944 when the Office of Price Administration instituted points for fats; in March, 1945 when the ration point bonus was doubled; in April, 1946 during the acute soap shortage and in May, 1947 when, with controls lifted, meat dealers upped prices paid for used fats.

Interestingly, these collection increases occurred when personal benefits to salvagers were enhanced. Currently, used fat collections are again on the upswing, this time at a greater rate than can be accounted for by the normal seasonal upswing. The answer to this phenomenon lies in the fact that fat salvage is now regarded by homemakers as an integral part of kitchen thrift and normal household procedure and has acquired the identity of a habit.

The status of habit which fat salvage currently enjoys was made possible by cooperation of all elements of the campaign. First, of course, is the homemaker, the meat dealer, the renderer, the open market and industry combination, but the entire undertaking would not work or, indeed even be tried without government cooperation and newspaper support. Without any funds used to further the program's objectives the Department of Agriculture's Production & Marketing Administration and Cooperative Extension Service, for example, have pitched in whole-heartedly. The Department of Commerce, the International Emergency Food Council and virtually every other government agency concerned with conservation have helped as well. Newspaper support has been equally important. Daily reminders urging women to save used fats appear in newspapers all over the country and their contribution is incalculable.

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